ADVICE
ON THE
TEETH AND GUMS,
WITH REMEDIES.

BY
JAMES HORNE.

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ADVICE UPON THE TEETH AND GUMS,

WITH

REMEDIES FOR THEIR DISEASES.

A FAMILY BOOK:

CONTAINING

ADVICE UPON CHILDREN'S AND ADULT TEETH,

WITH PRACTICAL REMARKS UPON

THE VALUE OF MECHANICAL ARRANGEMENTS FOR THE REMOVAL OF DEFORMITY OR RESTORATION OF TEETH,

AND

VARIOUS USEFUL REMEDIES AND PRESCRIPTIONS FOR DISEASES OF THE TEETH AND GUMS, &c. &c.

BY JAMES HORNE,

(LATE OF LONDON,)

SUCCESSOR TO MR. HUTCHINS, SURGEON-DENTIST, GLASGOW.

"Let but mankind recover their right over nature, which was given them by their Creator—let them be well provided of materials, and rectified and sound reason will direct the use."

LORD BACON'S NOVUM ORGANUM.

GLASGOW:

PRINTED FOR THE AUTHOR BY BELL AND BAIN,

AND SOLD BY THE BOOKSELLERS.

1851.

Dedicated

TO

THE LADIES OF SCOTLAND,

BY THEIR

MOST OBEDIENT AND HUMBLE SERVANT,

JAMES HORNE.

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INTRODUCTION.

In preparing a small condensed work like the present, and in offering *practical* remarks and advice upon the teeth, my object is to induce my readers to investigate (much more perhaps than they have hitherto done) a subject intimately relating to their appearance, health, and comfort. All that I desire to accomplish by this publication may not be realized, but I feel assured that good will result, if *some* even of the many facts placed before the readers' attention be practically recognized. It is with me a strong and hopeful conviction, that the dissemination of physiological facts, and the prevalence of correct practice has conferred, and ever must insure benefit, as it is a belief, that even *one* isolated truth presented to the human mind may be to the searching spirit "an ark floating upon the waters."

It is but just to state, that many facts and theories contained in this publication have been held by some of the greatest physiologists, anatomists, and microscopical investigators of modern times. I have endeavoured to condense in as clear a manner as I was able, and in as close a space as the several subjects would allow, a variety of peculiarities and diseases incidental to the teeth and gums, with such *remedies* as my experience can sanction, that every individual may understand his or her *own* case, and employ the prescribed alleviations.

I may here premise, that this work was intended and prepared for family use, and *particularly for such as are living at a distance from professional assistance.*

I have observed that most persons neglect their teeth when young, or become somewhat careless of their appearance when advancing in years; and if we consider the excessive refinement, and the stimulating and relaxing superfluities of one class, and the deteriorating effects of inadequate air and nourishment—close workshops—heated atmospheres—indifferent cleanliness and injurious excitement of others; we can easily account for the

deplorable condition of thousands of persons in regard to the healthfulness of gums and soundness of teeth. All this will become apparent to any one who will take the trouble to notice the teeth of the persons he may pass in the streets of our populous cities, he will scarcely meet with one in fifty whose teeth exhibit such an appearance as the health of the individual demands. The reader, I trust and hope, will not imagine that I arrogate to myself any excessive or absurd pretensions, when I say, that most of the *known facts* and *useful practices* of Dental Surgery will be found in the pages of this small work, condensed it is true, but with as few technicalities as possible.

I fear that not a few persons in reading scientific works are somewhat indifferent to the value of remarks or facts advanced. But this is perhaps not to be wondered at. The struggle for approbation, position, fame, and fortune, is now so evident in society, and oftentimes such unjustifiable means are employed to accomplish desired ends, that persons are not only becoming cautious, but I fear also somewhat prejudiced against crediting scientific opinions, placed before them for their sanction. Truth, however, whatever effect it may have upon

the individual or the public, must stand by its own merits.

It is, however, painful and humiliating to a thinking and well-meaning mind, to find that its intention to do good has in some cases been an indirect means of strengthening neglect, or creating prejudice in the minds of those who are inclined to DOUBT ALL THINGS, simply because they occasionally find published works differing upon the same subjects. To adjust or reconcile such anomalies is not the object of this work, such discrepancies are to be expected in the progress of mind, and as it is incident to scientific advancement that errors and diversified opinions shall exist, so truth shall sooner or later supersede or reconcile them. To practical discoveries affecting the interests of individuals and the public, no one should be indifferent, and it is highly gratifying to the disseminator of important facts to find that they have been fairly recognized, and his aim accomplished. The constant application of many minds in the same scientific investigations is apparent to those who are watching the present extraordinary era of inquiry and research into first principles, as well as the eagerness hastily to parade the slightest approach to originality.

But the furor created when these Lilliputian prodigies are questioned, may be somewhat modified and checked, when individuals find that the "circle" of discoveries rounds not themselves alone—that THEIRS "is not the only girdle put round about the earth in forty minutes." One fact must sooner or later force itself on their attention—that in proportion to GENERAL investigations, discoveries, and appliances, the PERSONAL must become but a secondary consideration, "the *individual* cease to reign." Facts and gradual progress go down to posterity; the individual to the earth from whence he came, and most likely to forgetfulness. This result, if it is to be regretted in a *personal* sense, is also to be expected. Principles are eternal; their collectors or discoverers mortal; and the overthrow of the personal is also a "finale" to the elevated perpetuity of individual charlatanism. Facts are being presented to the public in place of hopes, a greater tendency to general than to individual supremacy is arising, and the most profound investigator and collector of nature's secrets is but a simple pioneer to point out the way for their beneficial practical advancement. Of course upon all subjects affecting the welfare of mankind, where the RIGHT of inquiry

is recognized, we are certain of being benefited by the investigations, analyses, and conclusions of studious minds, or those whose experience and sufferings, thought and knowledge, have made them the "day-stars" of their age. "A demand for change, ever for the better, is one evidence of a good heart and of a thinking head; and though deep may be the regret at any personal inconvenience resulting from change and progress, onward must be the course of those whose spirits breathe for a holy purpose, a beneficial and attainable good." Thus much upon general investigation into first principles. It may be that the subjects treated of in this work will be by some persons thought trivial. I consider that attention to the condition of the teeth and gums is of great importance, and I have endeavoured to avoid all elaborate detail, and to condense as much as I possibly could a variety of useful facts, under the "heads" of the "Structure of the Teeth and Gums—Children's Teeth—First and Second Dentition—Irregularity—Decay of Teeth—Tartar—Mercury—Nervous Influence—Physical Structure of the Body—Neuralgia—Consequences resulting from the Loss of Teeth—Artificial Mechanical Arrangement—Pivot-

ing Teeth—Extraction of Teeth—The Exhibition of Ether and Chloroform—Remedies," &c.

My conviction of the value of the facts and remedies presented in this work for the reader's practical recognition, and my limited opportunities for its preparation and correction, must be my excuse and apology for any constructive errors that may be discovered.

150 West Regent-Street, Glasgow.

THE GUMS.

The teeth are surrounded with a red, firm, semi-cartilaginous and vascular substance—gum—adhering to bone, socket, and teeth. They have little sensibility in their healthy state, but when diseased and swollen, are at times extremely painful and irritable. The gum protects and gives firmness to the teeth, and assists with the external membrane in preventing the jarring, when in contact with other teeth or hard substance, and teach us what degree of heat or cold the teeth can bear. They have an intimate connection with the healthy or diseased state of the teeth. When healthy, the gums are red, firm, and adhesive; when diseased, they are of a dull red colour, or occasionally blue, loose, spongy, shrunk, and exudations (more or less) pass from them. According to the peculiarities of diseases, or morbid state of the gums, will be their

appearance; and all the various minutiæ discoverable in the practice of every practitioner will be manifested, but cannot be explained, in a small work like the present. If we take into consideration the nature of the gums from the moment of birth, their growth to maturity, their beauty of appearance when healthy, and their importance to the teeth, we can well understand that neglect as to their sound condition is indeed an act of great faultiness on the part of both parent and dentist. There are various stages and conditions of gum, each having its peculiar consequences. Many people's gums are in an unhealthy state, (although they may be quite ignorant of the fact,) but which, by some attention on the part of the patient, may be permanently removed.

The gums manifest and retain the healthy appearance of the blood, but when the arterial system is increased, the gum possesses more vascularity, and is filled with blood, which, if not removed, will become disorganised; the circulation of veins is retarded, and debility produced. The gum is much influenced by the exact state of health, the condition or derangement of the mucous membrane of the alimentary canal, and is liable to various diseases.

"In scorbutic gums, there is a brownish swelling appearance of their structure, the blood is carbonized, suppuration and occasional hæmorrhage takes place. In diseased appearance from scrofula there will be detention of blood in the apices of the gums, exudations from the surface—an atonic state of their general structure, but devoid of the brown colour so evident in scurvy. In diseased appearances from exhibition of mercury, there is increased glandular action, foulness, languor, morbid sensibility, and a dull blue tint of colour, and recession of gum. From constitutional and irritating causes alone, there will be general heat, swelling, redness, and irritation, with a dull heavy pain up the fang of the tooth. In constitutional debility, however induced, there will be an atonic state of the gum, absorption of the bony socket, and receding of the gum, and similar morbid sensibility, such as ensues from the use of mercurials. The result being similar to the absorption of gum in aged persons."

Various lotions are required for the gums according to the disease manifested. The following is a good wash for the teeth, and to sweeten the breath when gums are affected by mercury:—

Take—

Chloride of Lime, . .	Half an Ounce.
Water, ...	Two Ounces.

Mix well together in a phial for half an hour, filter, and add two ounces of spirit.

Or take—

Rose and Orange Flower Water, .	One Ounce.
Myrrh, ...	One Ounce.

Mix, and clean the teeth and gums with a soft brush, then use the "Areka" tooth powder, and rinse well with water.

When the gums are foul and scorbutic, take—

Clarified Honey, .	Six Ounces.
Tincture of Myrrh, .	One Ounce and a Half.
Oil of Cajeput, .	Five Drops.
Oil of Cinnamon, .	Ten Drops.
Cream of Tartar, .	A Quarter of an Ounce.
Tincture of Cochineal,	Half a Drachm.

Mix into a paste. If the gums can bear the use of a tooth powder also, clean the teeth with four parts of prepared chalk, two parts of Peruvian bark, and one part of Hyoscyamus powder, mixed together, and used with a soft brush, night and morning, before using the paste.

When there is a YELLOW appearance of the gum, take castor oil for two or three nights.

STRUCTURE AND ORGANIZATION OF TEETH.

The teeth are composed of an internal organic or bone substance, and of an external crystalline substance, *enamel.** They are distinct bony organs

* "The enamel consists of radiated crystalline fibres, composed principally of *Phosphate of Lime*, and forms a thin hard layer or covering upon the crown, thickest upon the crowns of the teeth, and gradually becoming thinner as it approaches the gum or neck of the tooth. The ivory or bone of a tooth consists of minute fibres or tubuli radiating from a centre. The delicacy of these tubes is extraordinary. Lieuwenach of Delf in Holland, by the aid of the microscope, informs us, 'that the whole tooth is made up of very small straight transparent pipes. Six or seven hundred of these pipes put together exceed not the thickness of one hair of a man's beard.' Their bone consists of earthy and cartilaginous substance; I have in my possession a tooth immersed in mineral acid, the earthy particles are dissolved, and the cartilage that remains forms a compact body retaining the shape of the tooth."

attached to alveoli (or bone sockets of the jaw). A tooth is divided into a crown, neck, and fang, and possesses within its body a cavity filled with a highly sensitive pulpy substance, of nerves and blood-vessels, which enter the apex of its root through a small foramina or opening, and according to the *number of fangs or roots* will there be a corresponding number of nerves and blood-vessels. Each tooth or fang possesses an *internal* membrane lining its cavity. The alveoli, or bone socket in which the fang is placed, also possesses a membrane lining its entire cavity. The reader will thus better comprehend why it is that there is often intense pain with a tooth, even when the internal nerve is destroyed, or external membrane exposed, arising from inflammation and thickening of this membrane, from constitutional or external irritants. In referring to the composition of enamel and bone, you will also see that by placing certain chemical substances, or *acids*, in contact with them, the LIME, &c., of which they are composed, must decompose, and the firmness and stability of the teeth give way. Berzelius, the celebrated chemist, gives the analysation of 100 parts of enamel of adult teeth to contain—

Phosphate of Lime, ...	85·3
Fluate of Lime, ...	3·2
Carbonate of Lime, ...	8·
Phosphate of Magnesia, . . .	1·5
Soda and Muriate of Soda, . .	1·
Animal Matter and Water, . .	1.
	100·

The bone substance contains—

Phosphate of Lime, ...	62·
Fluate of Lime, ...	2·
Carbonate of Lime, ...	5·5
Phosphate of Magnesia, . . .	1·
Soda and Muriate of Soda, . . .	1·5
Gelatine and Water, ...	28·
	100·

The bony or *internal* substance thus possessing less lime and more *animal* or decomposing substance than the external.

CHILDREN'S TEETH.

FIRST ERA IN TEETHING.

The strength or weakness of a child cannot positively be taken as evidence of an early or retarded growth of teeth, for many delicate children cut their teeth as early, or earlier, (as it may occur,) than stronger ones. The first or temporary teeth appear, as *a general* rule, in the following order:—

5 to 8	months,	the four incisores or front teeth.
7 to 10	—	the four incisores lateral.
12 to 16	—	the four molares or anterior grinders.
14 to 20	—	the four cuspidati, or canine, or eye teeth.
18 to 36	—	the four posterior molares or grinders.

Making the full number of the first set, twenty teeth, in the upper and lower jaw.

By giving the above dates, or appearance of the *first set*, parents may watch and become acquainted with the periods when the primary teeth SHOULD appear, and thus be enabled to attend to their children's mouths during the eruption and stages of growth. The first set continue growing from birth until *six or seven* years of age, when *twenty* primary, or deciduous teeth are developed as a complete set, differing in form and size from the second or permanent set, which are to succeed them. At six or seven years of age the first set commence shedding or falling out. As a general rule the incisores, or front teeth, loosen and drop out; but the molares, or double teeth, very often require the aid of a dentist to extract them, in consequence of their firmer attachment to the gum and bone socket. The shedding of the first set continues until thirteen or fourteen years of age, when they are consecutively succeeded by the same number of teeth, and twelve molars in addition, up to twenty-one years of age; thus making the full permanent set to consist of THIRTY-TWO, in place of the TWENTY deciduous or primary ones. The first set consists of three classes only, viz.: incisores, canines, and molares; but the second set consist of four classes, viz.:

incisores, canines, bicuspides, (or small molars,) and the large molares.

Prior to the protrusion of teeth, the gum of an infant is extremely sensible, the least pressure producing irritation. In some cases there will be merely a trifling affection of skin and diarrhœa; but in other instances, excessive irritability and pain, eruptions upon face and head, violent spasms, convulsions, &c.

In cases of great irritation from teething, *immediate application of the lancet* is one of the BEST remedies, as you at ONCE unload the overcharged vessels of the gum, and open a way for the immediate eruption of the confined tooth. If diarrhœa or looseness of the bowels ensue, it may be corrected by a little magnesia or prepared chalk. If the bowels be confined, give cooling laxatives. When spasm, sleepiness, stertorous breathing, and twitching of jaws are severe, then use emetics, leeches, blisters behind ear to withdraw irritation from the brain: *the warm bath is exceedingly useful*, by causing a determination to the surface, relieving difficulty of respiration, and in most cases affording instant relief. In these cases, however, it is always wise for the infant to be placed *at once*, under the

hands of your *medical adviser*, for when the NATURAL protrusion of teeth does not take place, it is indeed erroneous to wait until morbidity of system ensues. The pain from teething arises, principally, from the membrane covering the crown of the tooth being upon full stretch, and in a state of inflammatory action. Pain will not cease, and the tooth penetrate the gum, until this membrane is opened, or destroyed, either by a natural absorbing process, or external use of the lancet. When we consider that where inflammation exists, there is increased action of vessels, and consequent diffusion, owing to sympathetic action of parts, and that constitutional injury MUST ensue, by alterations produced from this violent action; it becomes evident how very necessary it is that parents should not neglect the important period of infant teething. I have stated that the teeth and gums sympathise with each other; and according to the state of the gum, the membrane or periosteum covering the tooth may inflame, sensibility and pain increasing from external agency or internal alteration, exudations, &c., commence. So constitutional disturbance, and derangement of health may be the aggravating causes of permanent diseased gums, and predisposi-

tion to disease and decay of teeth be consequent upon their being arrested in growth from *nutritive* alterations, and the prevention generally of the powers of the system exercising their functions in a correct and wholesome manner.

"According to Professor Camper, the mortality amongst infants is very great; he states that out of 5980 infants of the Foundling Hospitals of Paris, in one year no less than 4095 died during the first month; 673 in eleven months; and in five years ONLY 884 were found alive."

Another medical man states, "that more than two thirds of physicians' cases occurring from the fifth to the thirteenth month of infants' lives, are more or less *connected with dentition.*" Other well informed practitioners admit that the enlargement of glands, affection of lungs, dysentery, scrofula, abscesses, hydrocephalus, &c., may be occasioned from *neglect of infant dentition.* When the first set of teeth, however, do come up in a regular manner, without the consequences I have enumerated, the semicircular form, and beautiful regularity of a child's mouth and teeth, is very evident and charming. Thus the observing parent will watch the progress of dentition with care, and

assist, not contravene the order and method of nature.

As I have advanced, the primary, or first set, consist of twenty teeth; one singularity occurs, however, in relation to the anterior permanent molars, (the fifth tooth in the child's mouth, but the sixth in the adult.) This tooth (*so often extracted in mistake for a shedding tooth*) "is developed from the first or primitive alveoli or dental groove, whereas the other permanent teeth arise from a *secondary* alveoli or bone socket, or elongated portion of jaw bone. The first dental groove, or bone socket, absorbs away gradually as the first set of teeth come out." The anterior permanent molar may decay at an early period, (but providing its extraction is not required from existence of irregularity,) the decay may be arrested in time; a well arranged gold, or cement stopping, will ensure, in most cases, a permanency of use, and thus prevent the hasty and too common practice of extraction of the tooth. This tooth is a powerful assistant to mastication, and consequently, although it is too often the first tooth manifesting decay in children's mouths, I strongly recommend that every possible means should be resorted to, to save it prior to extraction.

Dr. Andrew Combe has published a most useful work upon infant treatment, and in referring to *causes* that are manifestly injurious to infant dentition, amongst the most serious, he refers to a close and bad atmosphere. His opinions are supported by the *Register General's* report of 1831, and prove the fact that *cities are bad for the residence of infants during dentition.* Out of a population in London of 1,594,890, there were 477 deaths from teething, while out of a population of 1,599,024 in some counties, there were 78 deaths only, a difference of 400, save one, against cities. In the year 1838, amongst a population of 1,841,377 in towns and cities, there were 1257 deaths from teething, while out of a similar population in seven country districts, there were only 204 deaths, a difference against cities of one thousand and fifty-three !! In 1839, in a population of cities, there were 763 deaths, while in an agricultural district of *similar population,* there were 179 deaths only.

In noticing the mortality of children, Sir James D'Ivernois remarks :—"If the different states of Europe were to keep and publish every year an exact account of their population, carefully stating, in a separate column, the precise ages at which

children have died, that separate column would exhibit the relative merits of the governments, as indicative of the comparative happiness of their subjects. A simple statement of figures would be more conclusive upon this point, than any other arguments that could be adduced."

I was desirous of ascertaining the mortality of infants from teething in Glasgow, Edinburgh, Perth, Inverness, Ayr, Paisley, &c., and the counties of Scotland. I was unable to get the vital statistics. On referring to the Glasgow Mortality Bills for 1838, 1840, 1841, and vital statistics of 1843 and 1844, I find that they do not give the particular information I require, the deaths from TEETHING are classed under *bowel complaints*, and I find that there were 5923 deaths FROM THE AGE OF ONE TO FIVE YEARS, under this head; this is a serious mortality, and clearly shows that something is wrong in the varied circumstances surrounding the infant population of this great mercantile city. In regard to teething, it is rumoured that six or eight out of ten infants, die from the effects of first dentition in Glasgow.*

* In an important and rapidly increasing city, such as Glasgow, and which, in a few years, like London, will require all

During the dentition of infants, and when decay takes place in the teeth, do not allow them to take many sweets or acids, as they easily combine with the lime of teeth and decompose. When convulsions take place from teething, Dr. Triplue advises *mustard* as an *emetic;* in four cases he found it cure, in a few minutes, convulsions of four or five hours'

the open grounds and fields around for building purposes, is it not requisite to "*take time by the forelock*," and while you have an opportunity, commence the planning of "Parks." Is this wealthy city to be the only one in Great Britain that refuses to take a lead in giving and retaining healthy spots for the recreation of the increasing population? How many families are positively compelled to leave Glasgow for several months in the year, because they have no parks or open green fields to send their children to for a few hours. How essential then that every means should be resorted to by those having power and means, and legislating for the happiness of this and other great cities, and to insure to the population as pure an atmosphere as the circumstances of a manufacturing town will permit. Parks should be made in each division of the city. If land is valuable, *so are human health and life*, and what IS the value of a few acres of land in comparison to the lives of thousands of our population? Is the FUTURE yet to demand of the PAST, "what hast thou done with thy stewardship"? Are we still to go on WAITING for the development of disorders and diseases, whether physical or moral, before we attack them?

duration. And here let me suggest to every parent to keep a lancet in the house, the smallest puncture or cut of the gum (*and let it be cut on the edge of the gum externally, where the swelling is manifest*) will generally prevent all chances of convulsions. Let there be no fear, no vacillation if a medical man is not at hand, an hour's delay may be the cause (and is too often so) of death.

After using the lancet, give some twelve to twenty drops of ipecacuanha wine, if there is much phlegm in the throat; and if the face and head is suffused with blood, give three to six drops of antimonial wine, according to age, about every two hours, and according to its effects; two or three doses will often do wonders if the child is kept quiet and allowed to sleep. As soon as you possibly can, have medical advice.

When you see a child of four or five years of age with all its front teeth decaying to the gum, you will generally find that there is a great acidity of the stomach, and as long as this state of the system is allowed to continue, the teeth will go on breaking to pieces, and oftentimes produce disease and abscess of the gums. Give the child mild antacid mixtures occasionally, let the gums be

rubbed with an astringent lotion, and use, at least once a-day, spirit of wine and water to the teeth, in the following manner:—

Take thin strips of fine linen wet with the spirit of wine and water, *and clean off all decaying bone on and between the teeth.* The spirit of wine will assist in preventing the rapid decay of the teeth, and may assist in keeping *all the teeth* from decaying down to the gum, until the child is of the proper age for their extraction; and if the small double teeth are also decaying, let them be well cleaned out, hardened for a week or two by the use of spirit of wine, and then stopped with cement, for it must be remembered, that if these small double teeth are extracted at five or six years of age, no other teeth are likely to take their place, until the child is nine or ten years of age, and for a child to be without such teeth for three or four years, is liable to produce contraction of the mouth, and probable deformity of the second set. Let me here impress upon parents, not to allow children's first teeth to decay away down to the gum, when five or six years of age. I have seen some very bad *second sets* in consequence.

THE PERMANENT SET.

SECOND ERA OF TEETHING, AND THIRD SETS OF TEETH.

The period of the eruption of the second or permanent teeth is an important era for the appearance of the mouth, and upon the judicious or ignorant practice pursued towards the child's mouth, will depend the production of a regular or irregular set of teeth, and consequent beauty or deformity. When it is understood that at about seven years of age there are forty-eight teeth or rudiments in the maxillary or jaw-bone, in different progressive stages, and of course considerably crowded together, the reader will easily comprehend the necessity of attending to the protrusion of teeth, which takes place at or before seven years of age.

The second or permanent set usually appear in

the following order, the lower generally preceding the upper set in some of the teeth:—

The First Permanent Tooth.	The Anterior Molares, (or double teeth,)	at 6 to 7 years of age.
Central Incisors, (or front teeth,) .	7 to 8	—
Lateral, (or small front,) . .	8 to 9	—
Anterior Bicuspides, (or small double,)	9 to 10	—
Posterior Bicuspides, (or small double,)	10 to 11	—
Cuspidati, (or eye tooth,) . .	12	—
Second Molars, (or large double,)	12 to 13	—
Third Molars, (or Wisdom,) .	18 to 20	—

N.B. Each tooth possessing as many nerves as there are fangs belonging to it.

It occasionally happens that persons never have their second eye teeth. I have noticed that in a good many cases it is hereditary. This phenomenon sometimes results from the fang of the tooth forming high up in the jaw, so that its body does not appear through the alveolar ridge and gum; and when such teeth do appear in advanced life, by the cavity gradually filling up, and forcing the hidden tooth to view, it is often exhibited as a specimen of a third set of teeth. It does sometimes occur, however, that in the case of aged persons

new teeth appear, and when such is the case, it may be an endeavour of nature to commence a renewal of that portion of the osseous system. I have often had patients who have come to show me what they called a "DOUBLE SET OF TEETH;" and such generally consisted of three or four sharp pointed SUPERNUMERARY teeth, or the second *small double teeth* crowding behind one another. If parties would remember that they OUGHT to have THIRTY-TWO ADULT teeth in the adult jaw, they would soon find out their mistake, and how their erroneous conceptions arose. In relation to the appearances of a third set in aged people at a climacteric period, I cannot do better than give the following views, to enable the reader to form an opinion upon the phenomena.

"There are certain climacteric periods, or physical epochs, in the life of man. The periods from about sixty years to ninety is considered the grand climaterics of life. The changes which so frequently take place at this interval are of two distinct and opposite kinds, and more particularly relate to the subject I am now treating upon. We sometimes find the system, at the period before us, exhibiting unexpectedly a very extraordinary renovation of

powers. Persons who have been deaf for twenty years suddenly recover their hearing, so as in some cases to hear very acutely; others as suddenly recover their sight, and throw away their spectacles, which have been in habitual employment for as long a period; others *return to the process of dentition, and reproduce* a *smaller* or *larger number* of *teeth* to supply vacancies progressively produced in early life. On the other hand, instead of a renovation of powers, we perceive as sudden a decline; we behold man abruptly sinking into a general decay, his strength, spirits, appetite, and sleep fail equally, his flesh falls away, and his constitution appears to be breaking up. The subject is obscure; and it is as difficult perhaps to account for either of these extremes, for the sudden and unexpected decline, as for the sudden and singular restoration. These periods are emphatically denominated the climacteric epochs."

THE FIRST AND SECOND BONE SOCKETS.

IRREGULARITY AND DEFORMITY OF THE SECOND OR PERMANENT SET.

During the growth of the second set important changes are going on in the mouth. The maxillary or jaw-bones are gradually elongating to afford room for the number and size of the second formation. The jaw of a child is semi-circular, that of an adult elliptical. The elongation of jaws takes place about the position of the small molars or bicuspides, for the reception of the twelve additional teeth. Irregularity may result from the permanent teeth arising prior to absorption, or from narrowing the size of jaw by too early extraction, or from the original size of the arch not being proportionate to the size of the permanent set, or from retaining and

allowing the growth of supernumerary teeth in the mouth. The most general causes of irregularity are from TOO EARLY extraction, or want of exact proportion in extent of maxillary arch and size of permanent teeth.

The bones, as a general principle, *bestow a particular character upon the body*, and it is of consequence that the *jaw-bone* should not be arrested, altered, or contracted in its progress and growth by too early extraction. When unfortunately such has been the case, the arch of the jaw becomes contracted, and thus prevents sufficiency of room for the enlarged set of permanent teeth, altering the progress of nature, and producing deformity of mouth. The wise and just method is to ASSIST, and not do violence to, or attempt to supersede, the progressive growth. In endeavouring to escape from one evil we should carefully avoid another, that of allowing, through fear or neglect, children's teeth, as it were, to run wild. When natural irregularity occurs, it is to be obviated either by extraction or judicious *mechanical assistance;* time, attention, and *encouragement being given to elongation of maxillary bone and eruption of the teeth.*

It is extraordinary to what an extent of disorder

and decay some parents will allow their children's teeth to arrive, prior to consulting a dentist. When this is the case, it is folly to expect that one or two hours' attention can remedy *years of neglect.* The object of an honourable practitioner is to produce beneficial practical results, and in many cases he must bring to his aid, experience and considerable time and attention prior to producing the best possible effects. It is erroneous to suppose that if the second teeth are extracted by MISTAKE, (and such a circumstance seldom occurs except by great ignorance or most censurable negligence,) and the first teeth are left in their places, they MUST remain in the jaw-bone for years. They will, as a *general rule,* sooner or later give way, and decay or fall out. There are two alveoli or fang sockets, and in the jaw-bones of a child of six or seven years of age you will see the twenty first set of teeth in perfect and beautiful order; behind and under the fangs of these first set you will see the second set more or less advanced in growth. I have a very beautiful specimen of this fact in my possession, and I shall be most happy to show the same to any of my readers who may feel an interest in the subject; and to SEE such specimens will do more to convince the

mind of the great necessity of watching children's mouths during the period of teething, than any thing *than can be written* upon the matter. Many parties have expressed surprise at children's teeth coming up irregular: it is not to be at all wondered at, when we see that the structure of the *internal* bone sockets are of a spongy form, or honey-comb appearance, and that when a strong pressure exists upon teeth, forcing them out of their perpendicular ascent and growth, that this less dense form of bone easily absorbs and gives way by constant pressure, and thus the pressed tooth comes up in every way but the right one. In irregularity of teeth the object is to *gradually* push the teeth into their natural position, and the bone sockets by this process alter their form. When a tooth is lost, the place, when filled up, is not by an increase in *size of the side teeth*, but the space fills up by approximation of these adjacent teeth, and usually by a general movement of the whole set. This is very apparent by looking at the place where a molar tooth has been extracted, you will see the space filling up by a strong inclination of adjacent ones. Too often also when the small double teeth have been extracted, and the vacant space has not been filled up

by *artificial teeth*, the six front teeth, from want of lateral support, *will give way*, (especially if there be a constitutional debility of the part existing,) and large and unsightly vacancies between the front teeth sooner or later appear. The latter misfortune can be prevented by scientific mechanical arrangements. You will also occasionally see a fine set of adult teeth destroyed in appearance, and the mouth apparently on one side, when during the growth of the second set, one or two of them have been extracted on the right, and not on the left side, or *vice versa*. Such teeth have generally been extracted too early.

A dentist will occasionally meet with *particular* cases of deformity, and when such cases are presented to his notice he should not too hastily give an opinion upon them, unless certain from past experience that his judgment is correct.

About four years ago a young woman was sent to me by a medical gentleman in London, to see what could be done to remove a very great deformity in the appearance of the mouth, occasioned by the protrusion of a front upper tooth. Upon inspection, I found a large tooth slanting laterally over its central fellow, and which was occasioned

by a small osseous formation upon the inside of the crown of the tooth, resting upon the right central one. At first sight, when in the mouth, it had the appearance of an union of a front and lateral tooth. I put up a flat curved probe between the fang and alveolar process, and found the tooth firmly fixed in its position. In consequence of its unsightly appearance, I suggested its immediate extraction, and filling up the large cavity with a mineral tooth. At first the young woman declined losing the tooth, from fear of injury to the jaw-bone, (having had the deformity gradually increasing from infancy, and frightened by several persons pronouncing it attached to the process of the jaw.) I expressed my conviction that there was no osseous union; but as she was still frightened as to the probable consequences from extraction, I suggested her consulting her friends and advisers again, and to call and tell me the result. She came in a fortnight with her mother, and if possible more alarmed than before, telling me that two parties she had been to had declined to extract the tooth, believing from its peculiar form and position that it was attached to the jaw. To convince the young person and her mother of the contrary, I placed a small scalpel

between the fang and bone process, slightly pressing the tooth outwards, thus convincing them that the tooth *could* be moved. It was then easily extracted with a curved pair of forceps placed well up the root of the tooth, and the patient did not complain of the pain. In about a week, the gum having closed upon the cavity, I fitted a mineral tooth of the exact size and colour of the natural one upon a small gold plate, not only to the delight of the young person, but also making an extraordinary improvement of the countenance. Upon an inspection of the tooth, when extracted, it exhibited on its internal side a singular resemblance to the *human hand*, (on the palmer side,) and what I at first mistook for a stunted lateral tooth attached to a central, was an enlargement of bone and enamel, corresponding to the shape of the thumb. I have (for any one's inspection) this peculiar tooth in my possession at the present time.

In 1848 a gentleman called upon me in Berkeley Square, London, to look at an upper molar tooth on the left side, with a small perfect double tooth extending out of the process nearly horizontal with the palate bone; as there were the full complement

of sixteen adult teeth in the upper jaw, I expressed my conviction of its being a supernumerary bicuspid tooth, and requested him to submit to its extraction. He refused, having had prior consultations with several dentists upon the subject, and two of them having expressed doubts of its being extracted without bringing away the large molar tooth with it, (from the probability of osseous union.) As it was a continual annoyance to the tongue, I at last induced this patient to let me cut off the crown, and file it down to the gum and large tooth, this operation was soon effected, and having destroyed the nerve with caustic and lanced the gum to prevent inflammation around the sound large tooth, no other inconvenience has been felt since.

A few months afterwards I had presented to my notice a rather similar deformity in a lady's mouth on the right side, with this difference, that the tooth was the posterior bicuspid, or small double tooth, forced quite out of its natural position from the arch not being sufficiently large for the permanent set, in other respects the teeth were particularly even. This tooth was easily extracted with the straight narrow forceps, without moving the molar tooth at its side.

"Irregularities occasionally arise from deficiency or excess of the calcareous matter which enters into the structure of the teeth. This has been sometimes so defective as to leave the teeth cartilaginous. *Plenck* extracted from a girl, seven years of age, a canine milk tooth of the lower jaw, which was livid, as soft as cartilage, and compressible by the finger, especially at the fang—a specimen of imperfect original development." The opposite extreme is the more frequent. Inseparable union between the teeth and their sockets, as mentioned by *Courtois*, may occur, and *Schenek* alludes to one instance where the whole of the teeth were found to constitute a single bone or curb of ivory. Such deformities as the latter ones are exceptions. Parents, however, cannot be too careful in watching their children's mouths during the shedding season, as a few months' neglect may occasion years of trouble, annoyance, and regret to the child.

A deformity occasionally occurs in the mouths of young people who acquire a habit of throwing the chin forward, this practice produces a disagreeable, underhung, and aged appearance of the lower jaw. There is also an underhung and *one side habit* of forcing the lower jaw forward, occasioned by a

custom of biting the inside of the under lip, &c. To prevent such irregularities a proper gag should be immediately placed in the mouth, and regularly worn there day and night—keeping the mouth in its natural position until these distorting habits cease entirely. An irregular tooth may also throw the whole set of teeth awry, or produce a somewhat silly look of the mouth—this appearance can also be remedied by the use of a gag. It is rare for two cases of this kind of irregularity to be alike, and if some degree of attention is paid by parents to the EARLY appearance of such deformity in children's mouths, and they will insure to the dentist that these GAGS SHALL *be worn in the young patients' mouths* and *not in the pocket*, (which unfortunately is sometimes the case, and the dentist incurs unjustifiable censure from the case being unsuccessful,) there is no doubt but that the deformity can be ultimately and ENTIRELY removed.

DECAY OF TEETH.

Various disputes have arisen respecting the cause of decay of teeth, or of caries, as it is called by physiologists. Decay appears to attack the tooth in various ways; upon the top, or side of the crown, at the neck of the tooth, &c. It may ensue, in the first instance, from hereditary predisposition, constitutional peculiarities, application of mercury, unequal lateral pressure, mechanical injury, use of strong acids, deposition of tartar, and absorption of alveoli, and gums. Decay may occasionally take place so gradually, that the crown of a tooth breaks away without producing tooth-ache. When this disease once attacks a tooth, it goes on (unless arrested in time) destroying the vitality of the surrounding bone, until the whole tooth is decayed, and the crown breaks away from the gum. Its general appearance is upon the crown,

on its external surface, usually indicated by a dark speck, or discolouration. The common notion that one decayed tooth will infect its neighbour, is an erroneous one. When a tooth is decayed, it may produce irritation of the periosteum covering its root, and the gum around it, and thus *irritate the neighbouring parts through the existence of sympathy*, causing disorganization, and consequent decay of the next tooth. The consequences of arrested growth and decay of teeth in the infant, are not sufficiently thought upon, or understood. When we know that the origin of the tooth is from a membraneous and pulpy substance, (maintaining existence from nutritive supplies,) prior to the eruptive stage, we can well imagine how bone and enamel may be arrested in growth, or *deteriorated in* fibre and tubuli, by disturbance of the nutritive system. If natural progress is arrested, and there ensues a deficiency of the calcareous depositions, (upon the sufficient and sound existence of which, depends the whiteness and perfectibility of teeth,) we can then comprehend the injury that must inevitably result. We see inherent predisposition produce consequences to all portions of the human frame, and the teeth are not exempted from these physiological phenomena.

The honey-comb tooth * (as it is called) is one evidence of arrested growth in the enamel, consequently there is often exposure of the bone to external injury, the tooth being without its natural preservative hard covering, or enamel. Decay of teeth will often occur from peculiarity of shape; the deeper the cavities between the points of the crowns of double teeth, the more difficult it is to clean away acidity and depositions that may settle there; and you will generally see such shaped teeth decay early in life. So with children who have teeth very early.

Decay gives rise to an unpleasant fœtor with the breath, a difficulty to masticate food, injury to the constitution, by the putrid decaying bone gradually mixing with the saliva passing into the stomach, and being absorbed into the system. The consequences to the gums, when decay has been allowed to proceed for a long time, without the requisite medical attempt to check its progress, may be either local, or have produced constitutional evils; for while decay is proceeding in the crown and fangs of teeth, (particularly in children,) inflammation and its consequences are also advancing in the

* This unsightly appearance very often occurs when an infant has had the *measles* during the period of dentition.

gums and membranes. Whether teeth decay in pairs (which is generally the case when predisposition exists, or there is powerful lateral pressure upon a weak enamel) or singly, from some of the causes I have enumerated, the first step is to seek the advice of the dentist. If with this decay there is much pain and inflammation of gum, at once put on one or two leeches, or have the gum well lanced, saturate the CAVITY with spirit of camphor, or laudanum, or oil of cloves, or chloroform, two or three times a-day, and *keep the cotton wool in the cavity* until you can touch the inside without causing pain. By thus acting, you destroy the nerve, and greatly assist the dentist to ultimately clean the cavity of all decaying bone, and allow it to be stopped with gold or cement.

Our cements now are very much improved, compared with what they were several years ago, and do not cause the tooth to become so black and unsightly, and from the cement being placed in the tooth in a SOFT state; if the stopping is inserted CAUTIOUSLY in the cavity, *no pain whatever will result;* and should inflammation (by any accident) afterwards take place in the gum of the stopped tooth, let it be well leeched or lanced, a warm

poultice placed OUTSIDE the cheek, and taking an aperient also at bed-time, in most cases the tooth will be preserved for years. I am the more explicit upon this subject, from a belief of the desirableness of retaining the teeth in the mouth as long as possible. I may here suggest to the patient, that *should a stopping come out of the cavity, in no case should the tooth be left exposed to air and moisture, insert into the cavity a small piece of wax, made soft at the fire, or gum mastic, made soft by a little spirit, and keep the tooth continuously free from exposure, until your dentist refills the cavity.* If you do not have it refilled, the tooth will go on decaying, and most probably the crown will ere long break off close to the gum. Many parties allow their teeth (when decay has once commenced) to go on until it is an impossibility for a dentist to preserve them as he could wish. The old cements gave such a black unsightly appearance, and occasioned so much dissatisfaction, that one can scarcely feel surprised at persons being dubious of the value of cement stoppings. If, however, parties will only attend early, upon the decay of a tooth, to the instructions given above, I will answer for them retaining their decaying teeth for many years.

There is often a strong resemblance between the mouth of a child and that of its parent, and if parents are aware of constitutional peculiarities, and derangement of their own teeth, let them watch well the growth and changes in those of their children. It is rather an uncommon circumstance to meet with persons who have not suffered from decay of teeth, and its general attendant, toothache. Decay will proceed, occasionally, in opposition to all endeavours to arrest it, and it is absurd for a dentist to deceive a patient, and promise impossibilities in such cases. Keeping the teeth clean, referring occasionally to the experience of a dentist, using antiseptic lotions, and simple tooth powders, (prepared chalk is the best,) removing broken edges of teeth, and attention to the general health of the constitution, is not a very laborious occupation; and as the appearance of sound teeth contributes so much to beauty of countenance, I find few persons who *really become acquainted* with *all the consequences* arising from loss of teeth, but are quite willing and anxious to pay the necessary attention to all the circumstances by which teeth are to be preserved.

SALIVARY CALCULI.

TARTAR AND DISCOLOURATION.

The saliva issues from three sets of glands, situated in different parts of the mouth. The quantity of this fluid secreted daily, according to some authorities, is about twelve pounds in the twelve hours, varying, of course, according to circumstances. This secretion is more copious in children and old persons, in cold than in warm weather, in the day than in the night. It consists, according to Berzelius, of phosphate of lime, soda, &c. According to the experiments of Pringle, it possesses antiseptic properties. It becomes putrid in warm air, and is soluble in carbonated alkali. When it is decomposed, it produces what is called *tartar*. It settles upon the teeth, and fills up the inter-

stices, increasing in size according to the quantity of depositions allowed to accumulate, &c. The saliva is *alkaline* when fresh, and becomes *acid* by its exposure to the atmosphere. "It assists," according to a talented investigator of its properties, "the spirituous fermentation of farinaceous substances." It augments the taste of the food, by the evolution of sapid matter. During mastication, it mixes with, dissolves, and resolves, into its principles, the food, and changes it into a pultaceous mass, fit to be swallowed. It moderates thirst, by moistening the cavity of the mouth and fauces. Its depositions upon the teeth, as a calculous substance, depends upon various circumstances. Upon its first deposit it is soft, but by non-removal it crystallizes, and becomes hard and brittle, varying in character, and easily stained by coloured substances, such as tobacco, gargles, &c.

Tartar is exceedingly destructive to teeth. It insinuates itself under the edge of the gum, produces irritation, redness, sensibility, separation of the gum from neck of tooth, absorption of the edge of the alveoli or bone socket, and wasting of gum; the loosening and falling out of teeth, generally follows. Occasionally after the entire absorption

of the gum and socket, the tooth is alone supported by *years* of accumulated collection of *tartar*. I have seen no less than *three front lower teeth*, embedded in one mass of this substance, without the least support or attachment to gum and bone socket, come away *en masse*, by the simple detachment of the collection of tartar adhering to side teeth as well. An unhealthy condition of gum is also produced from constant local irritation of this substance, and sponginess, exudations, and small ulcers arise, removeable, however, by the application of proper lotions. *Tartar* gives a very unpleasant fœtor to the breath, and is exceedingly dirty and disagreeable to the sight, in every respect being a very unpleasant accumulation. By the removal of these deposits, (and which CAN be removed in an easy and *painless* manner by the experienced dentist,) and some degree of attention and cleanliness on the part of the patient afterwards, this corroding substance may generally be kept from producing injury to the gums and teeth. Thus, if the child or adult mouth has been correctly attended to, the gums may resume their natural healthy appearance, and the teeth may be saved, (at least from *this* exciting and constant cause of

decay and loss.) I would here caution the reader against the use of strong ACIDS to the teeth, as the lime of which they (teeth) are composed, is soon acted upon by such injurious applications, and decomposition is the inevitable consequence.

I mention this circumstance particularly, as I *have* myself seen the destruction of teeth arise from the foolish application of common vitriol for the removal of tartar, and blackness of teeth arising from smoking. In hare lip (especially in the lower lip) it is difficult for persons to retain their saliva. The saliva, so useful to the proper moistening of the food, is thus lost, and the general consequence will be, that a person subject to this dribbling, will have dyspepsia until the deformity has been removed. When children have this unpleasant appearance in the upper lip, however, the saliva does not escape in the same manner. In either case, the use of mechanical arrangments are often highly conducive to assisting a cure, especially when there exists a lateral position of the front teeth. In the researches which are still proceeding amongst scientific men, as to the value of the saliva as an assister to digestion, there is great opposition. The celebrated Dr. Blowlett, in his

"Traité analytique de la digestion," maintains that the salivary fluid *has no* influence in accelerating the process of digestion; at the same time, Dr. Wright asserts that, "without the presence of saliva in due quantity, and of a HEALTHY kind, the stomach would imperfectly perform its functions."

My own experience has satisfied me, that how fine soever you may cut or pound your meat, (from the loss of teeth, and consequent difficulty of mastication,) if the food pass into the stomach without being sufficiently moistened, and formed into a pultaceous mass by the saliva, *indigestion* will, in most cases, be the consequence.

REMEDIES. — An excellent tooth powder for tartar :—

Take—

One Ounce of Powder of Bark.
One Ounce of Bole Armenian.
Half an Ounce of Bicarbonate of Soda.
Three drops of Oil of Cinnamon.

Mix, and use upon a brush after cleaning the teeth with camphorated chalk.

After the removal of tartar by your dentist, use the following gargle to the gums:—

Tincture of Myrrh, . .	Six Drachms.
Camphor Mixture, . .	Eight Ounces.

Made into a lotion, and rinse the mouth at night.

If the gums are too tender for a tooth powder, use:—

Spanish Soap, . . .	One Drachm.
Carbonate of Soda, . .	One Drachm.

Mixed with sufficient water to make a paste, and use until the gums will bear the above tooth powder.

MERCURY.

THE CONSEQUENCES RESULTING TO THE TEETH, FROM ITS IMPROPER USE.

Mercury, when improperly applied to the system, is a powerful destroyer of the teeth. When properly used, it is, no doubt, a most salutary medicine. From *fear* of its use, or violent exhibition of mercury, an uncertainty of opinion about its value has arisen, highly prejudicial to its wise application in disease. It has two effects upon the system, *one* as a stimulus to the constitution, the *other*, a specific on diseased action of parts. Some constitutions are more predisposed to serious consequences from its use, than others; and with such, a few grains will produce soreness of gums, ptyalism, and looseness of teeth. In whatever form

mercury is introduced into the system, it stimulates the salivary glands, and MAY produce various consequences; irritability, hot mouth, swollen glands, excessive flow of saliva, sore throat, ulceration of mouth, patches on the body, thickening of alveolar periosteum, quickened pulse, sloughing of gums, and even necrosis of jaw bone.* In some of these cases, relief may arise from the use of purgatives, nitre, lime water, camphor, bark, and astringent gargles, and taking care that *quick* arrested ptyalism by *cold*, does not take place, and produce serious constitutional disturbance.

The gums, by the use of mercury, possess more vascularity, are languid, and often an unpleasant

* Mr. Thomas Bell relates a case of a poor child of three years old, to whom a chemist had given CALOMEL for measles, to such excess, that in addition to ptyalism, swollen tongue, ulceration of gum, lips and cheek, there ensued necrosis of the anterior arch of the jaw, and loss of seven teeth.

And I had myself a patient, residing in the Regent's Park, London, who, in the space of six years, lost the whole of the upper, and seven of the lower front teeth, from the excessive use of mercury, given for a liver complaint. This lady never had a carious tooth, or knew what the toothache was, or lost a permanent tooth, although forty-two years of age when sali-

fœtor proceeds from the mouth, accompanied with bleeding of gums on pressure. The gums are likely to assume a bluish appearance, and absorb away from the neck of the teeth, leaving them considerably exposed. Where there has been excessive exhibition of mercury for diseased liver, I have seen cases of a most destructive nature to the teeth, all of them dropping out one after another, in an undecayed condition, from the absorption of the gums and bone sockets which supported them in the jaw. The workmen in quicksilver mines are in a constant state of salivation, with incurvated limbs, possessing neither teeth, appetite, nor health. After the mercury has acted strongly on the con-

vated. It happened that the medical attendant, some time after, had himself a very bad liver complaint, and having a very fine set of teeth, (of which he was particularly proud,) the lady, who was a satirist in her way, used very often to hint to him the *absolute* necessity of using a strong remedy for himself, such as he had induced her to adopt. The suggestion of the patient was, however, smilingly, but firmly declined. In justice to this medical gentleman, I must mention, that although the lady had by his advice rubbed mercury into the side, she might, as she naïvely told me, "*have rubbed in more than was prescribed!*"

stitution, and there is palpable evidence of absorption of gum from the neck of the teeth, it may be sometimes arrested, by avoiding all exciting stimulating drinks, strengthening the constitution, using carbonate of soda, with prepared chalk, as a tooth powder, and seeking the assistance of your physician in removing debility of constitution.

Do not fancy that TIME *will wear out this disease*, if allowed to proceed without being arrested. The certain consequences are loose teeth, constant tenderness of the gum, and an indifferent digestion, a nervous irritation of the system, and as a last resort, to avoid all the consequences from loss of teeth, *an entire artificial arrangement*, which, however, might have been obviated by timely and judicious constitutional and local applications.

It may be useful to give to those who find the use of mercury positively essential for *children*, Dr. Schapp's recommendation of the following powder, during the administration of mercury, to prevent salivation.

Dried Alum Powder,	Two Scruples.
Powder of Cinchona Bark,	One Draehm.

To be used with a soft brush, night and morning.

The OLD cements for stopping teeth, were a preparation of mercury, silver leaf, steel filings, &c., and were too often put into the cavities of teeth in a dirty and careless manner, and many patients have been astonished to find that their artificial gold cases, when placed in contact with such teeth, have become brittle, and easily break, independent of feeling a peculiar galvanic sensation in the gums. They will understand why this is, when I mention that mercury combines with many metals, and they become brittle and soft in proportion to the quantity of mercury applied to them; mercury being also a good conductor of caloric, electricity, and galvanism.

When there has ensued "*salivation*" of the mouth, and the gums have been much influenced thereby:—

Take—

Tannin, . . .	One Scruple.
Brandy, ...	Half an Ounce.
Camphor Mixture, . .	Five Ounces.

Mix, and use night and morning after cleaning the teeth.

Let it be always kept in mind, that if "*sali-*

vation" from mercury has taken place, and its effects upon the system have not AFTERWARDS been removed, the GUMS, sooner or later, will manifest its peculiar and insidious power, and the teeth *will* SUFFER.

When the gums are receding from the teeth:—

Take—

Alum Powder, . . .	One Drachm.
Decoction of Bark, . .	Two Ounces.
Infusion of Roses, . .	Two Ounces.

Mix, and use night and morning, and after cleaning the teeth at night, rinse the mouth with carbonate of soda water.

For further information upon this point, refer to the chapter upon "gums."

TOOTHACHE—TIC DOLOREUX—NEURALGIA

Toothache may be the consequence of decay and exposure of the nerve and pulp, or periosteum of tooth, or it may be attendant upon local disease of parts, nervous affection, and constitutional sympathy. Whatever the cause may be, it is a most distressing malady. Pain, want of rest, inability to take sufficient nourishment, often reduce a person to an excessively low state of nervous and physical debility. The extraction of a tooth is not always the precursor of ease and remover of pain; leeches, fomentations, cataplasms, may be applied, tooth after tooth may be sacrificed, and still the pain and agony remain, or ceasing upon one side of the mouth pass to the other. Such cases come under the consideration of most dentists, and it is requisite that in the attempt to cure this distressing complaint, a correct knowledge of the patient's constitution and predis-

position, &c. should be arrived at. Where decay and exposure of *nerve* is the cause of toothache, a soothing and absorbing tincture, (or, as I have mentioned before,) the stopping the orifice with gold or cement, to prevent exposure of nerve to cold or external irritants, is the best plan, and in most cases is successful in removing pain; but when toothache remains AFTER these usual applications, if leeching or lancing the gum is not effective, the final remedy is generally its extraction. When the pain is *decided* to be tic doloreux, or neuralgia, which is generally manifested by the pain being incessant during its continuance, and *periodical*, and which may arise from various causes, such as over-mental agitation, tumours, and bone pressing upon nerves, wet, cold, malaria, derangement of the digestive organs, &c., it would be useless to *extract teeth*, for the removal of what may be the result of *constitutional derangement*. Under such circumstances, consult at once your medical attendant, or endeavour to remove mental disquietude, &c., and strengthen the system by the use of carbonate of iron, sulphate of quinine, and change of air and scene. Medical men in the present day are paying great attention to the *causes* and *remedies* for this

painful malady—neuralgia—and by their scientific research, a disease which has hitherto (as it were) somewhat defied science, will, I hope, eventually be mastered. I have explained that common toothache is generally the exposure of a nerve, through decay of its external covering; whatever be the cause, the blood-vessels associated with the nerve generally inflames, swell, and *become too large for the canal of the tooth* in which they are placed, pressure is produced against the bony sides, and excessive pain ensues.

The opinions of physiologists are at variance in regard to the causes of confirmed neuralgia. Drs. Black and Wallis consider that "the nerves which are the seat of neuralgic pains take their exit from the interior of the body, through *canals in bone* or unyielding tendinous structure. Each nervous twig is accompanied by a branch of an ARTERY and a VEIN; thus, nerves contained in rigid canals must be subjected to pressure whenever their accompanying vessels are unusually distended with blood. Upon this pressure depends the neuralgic paroxysm." I have myself known tooth after tooth extracted without any beneficial result. The difference between common toothache and neuralgia is, that in

the latter case the pain is *periodical.* If a tooth is the cause (whether decayed or not) it should be at once extracted, and should there be any doubt existing *which tooth it is,* give several gentle knocks upon the crown of the tooth or various teeth, with a small instrument, until you feel certain that you have hit the sensitive one, then act with that tooth as the peculiarity of the case demands.

It often occurs that for several days continuously persons will feel great tenderness of gum, and constant pain *all round the teeth,* and in fact cannot tell you what tooth it is that produces the suffering, in such cases take a mild aperient for a night or two, and for several mornings gargle the mouth (after cleaning with tooth powder) with a spoonful of carbonate of soda in half a glass of water, this will neutralise the acidity of the saliva, remove the hot sensation of the mouth, and with it the cause of pain. I have before remarked that persons who are in the country, and cannot conveniently get the assistance of a dentist, should keep continually in the cavity of the tooth a little gum mastic softened by spirit of wine. If this composition is put upon a very small piece of cotton wool, and placed in the cavity gently, it will harden sufficiently to last a

week or so, then renew it if required, *but on no account let the cavity be exposed to the chance action of the air or moisture of the mouth.* If there arises neuralgic attacks in the face as soon as the *cheek comes in contact with cold air*, paint the cheek over with a solution of isinglass; and in no case allow your teeth to be extracted for this disease, unless there is evident confirmation that they ARE the local cause of suffering. The undermentioned lotions are useful to keep on your toilet table, when teeth are much diseased and broken:—

REMEDIES for toothache.

One Grain of Nitrate of Silver.
One Drachm Distilled Water.

Mix and wet a small piece of cotton wool, and place carefully and lightly INTO (not outside) the cavity. Do not wet too much, or drop the liquid in the mouth.

Or,

One Drachm of Alum.
Half an Ounce of Spirit of Nitric Ether.

Mixed and used as above alternately with "*Chloroform.*" Ammonia and Ether applied in the palm of the hand and placed on the cheek is oftentimes most effectual.

Or,

Insert into the cavity, Oil of Cloves, Cajeput Oil, Chloroform, Spirit of Camphor, Gum Mastic saturated with Spirit of Wine; and gargle the mouth with *Carbonate of Soda* and Water (half a spoonful of Soda to a small glass of Water).

For toothache from irritability of the system without appearance of decay:—

Take mild Aperients, Strengthen the System, Change of Air, and if there is much acidity of mouth, gargle with Carbonate or Bicarbonate of Soda several times a-day.

NOTE.—In relation to the application of ACIDS to the teeth, I find that many persons are in the habit of using "vitriol," either to cure toothache, or to clean off discolourations. This is a most reprehensible practice, and very often serious consequences ensue. I shall relate the following case in point:—

"A young woman, age fifteen, applied to W. Knox, a surgeon in England, for an affection of the teeth and gums, occupying the right side of both the upper and lower jaw. The patient stated that she had suffered severely from toothache for a length of time. The teeth on the right side appeared all diseased. Her cheek was a good deal swollen, and her general health not very good. I found the mucous membrane present

a remarkable *white cartilaginous appearance;* small portions of the teeth were seen projecting beyond the gum, and these portions of the teeth were of a deep yellow colour. I found I could remove large portions with my fingers. She said that she had repeatedly applied a fluid by means of a piece of rag, and had applied it generally to the whole side of the mouth. She had purchased it at an apothecary's shop. She found, when put into her mouth, it produced a hissing noise, similar to a heated iron when placed in water. It at first relieved her of pain, by rendering the entire side of her face void of all sensation; but finding it troublesome to use, had given up its application.

"This patient had laboured under a neuralgic affection of the fifth pair of nerves supplying the teeth. Her teeth had originally been free from blemish, and I think those which I found sound, were the best I ever saw. The remedy sold her, had evidently been some powerful *acid.* The enamel was entirely destroyed, and as the bone part must, at the patient's age, be in an active state, the result may, in all probability, be some frightful tumours."

I have found that "*chloroform*" *and oil,* mixed together, and applied externally upon the side of the face when *neuralgic* pains arise, is a very good remedy for relief of pain. Persons must be cautious, however, not to apply it too often. The best plan is to rub a little of the mixture upon a small piece of flannel, and to tie it over the affected part, avoiding the eyes and mouth.

THE NERVES AND NERVOUS INFLUENCE.

In the last chapter, upon toothache, I referred to constitutional sympathy as one of the causes that very often produce this serious suffering, and I consider that parents and individuals who have young children under their charge should pay some little attention to the nervous system, not forgetting that essential portion of our subject relating to the TEETH and GUMS. To comprehend the power of nervous influence upon the human frame, it is necessary to trace some of the researches of such physiologists as Sir Charles Bell, Cooper, Marshall, Hall, Hunter, Elliotson, Brodie, Fothergill, Mott, &c.

Thus, the nervous system emanates from the brain, spinal cord, nerves of the spine, and the ganglionic or sympathetic system, (the sympathetic system is called ganglia, from its disposition to

form small knots of nerves). The *fifth pair*, which supply the teeth, is called the casserian ganglion; in fact, as a whole, it is a compound nerve, *analogous to those of the spine*.

The sympathetic system extends itself from each side of the spinal column, and distributes branches or communicates with all the other nerves, internal organs, &c. There are about twenty-nine sympathetic ganglia in the human body. It is a system (as it were) *within itself*, and its sympathetic affections are most difficult to follow. The cerebrum (or front portion of brain) has connection with the anterior column of the spinal cord; and the cerebellum (or back portion of brain) has connection with the posterior column. The *anterior column is for motion;* the *posterior for sensibility*. The spinal column contains the spinal cord, and the root of the spinal nerves. The *nerves are the conductors of sensation*. Every regular nerve has TWO filaments or roots, ONE for the purpose of common sensation, and the OTHER for volition or motion. The nerves thus possess capacity for receiving impressions and putting the muscles in action. The nerves appear to possess the power of undefinable extension over the whole body; susceptibility

passing with the nervous matter. The nerves differ in form and firmness; they do not, like the muscles, possess *contractile power,* and they depend for life, like other parts of the body, upon a requisite supply of blood; for, deprive a limb of blood, and you destroy its *nervous* power.

All sensation conveyed to the brain is conveyed to the two lateral sides. Destruction of the hemispheres of the cerebrum, or front portion, destroys the motion of the corresponding parts of the body. Thus, you may occasionally see internal parts of the brain diseased without loss of sense, but if the GENERAL *system* of the hemispheres is deranged, the mind will be more or less affected. *The sensibility differs exceedingly in different temperaments,* and there are various modifying causes which assist in altering the sensibility of the nervous system: diet, clothing, exercise, climate, education, habits of association, all tend to this object; and the difference of pain or pleasure that the same organization may receive at various periods of life, may thus in a great measure be attributed to the changes which the nervous matter, or sensibility of the system, undergoes.

The sensibility of the FACE and TEETH depends

on the *fifth nerve*, which arises out of the back of the head at the top of the spinal column; it is the largest nerve from the skull, is GANGLIONIC, and the right side generally larger than the left. This fifth nerve conveying nervous branches to the teeth, it follows, as a matter of course, that in proportion to its varied ramifications and connections with the great sympathetic system, many diseases of the head, neck, abdomen, &c., sympathetically affect the teeth, gums, and face. The fifth pair of nerves, which supply the eyes, face, and teeth, pass in three branches from BEHIND the ear to the lower jaw, the upper jaw, the eyes, face, and forehead. Thus, exposure of one nerve in a tooth, may produce sympathetic agony over the whole face, eyes, and head; the PRESSURE upon one nerve produce NEURALGIC pain in the whole three branches. This fact of the nerves of the teeth, eyes, and face, passing from one ganglionic root, will instruct the reader why it is that when one tooth is affected, there are at times pain, swelling, and nervous irritability of surrounding parts, &c.

It is impossible in these brief statements, to do more than hint at the wonderful and beautiful sympathy and dependence of one portion of the

nervous system and human frame upon the other, showing, as Combe truly says, "that any NEGLECT or infringement of organic laws of our being, may seriously deteriorate the whole human machine, and entail upon the infringer lasting evils." All circumstances that produce deterioration to the infant frame will more or less affect the sound permanent condition of the teeth and gums. While I am drawing the attention of my readers to a consideration and investigation of the nervous system, I cannot forbear referring them to the next chapter upon the necessity of a SOUND PHYSICAL STRUCTURE FOR CHILDREN.

NECESSITY OF A SOUND PHYSICAL STRUCTURE OF THE BODY.

THE reader may say, "What has sound physical structure to do with teeth, when we see many healthy persons have BAD teeth?" Very healthy persons having VERY bad teeth from constitutional causes, *are the exceptions;* but very delicate, weak, and unhealthy children, having sound teeth, or which are likely to last, is, *as a rule*, what I never yet experienced, and never expect to see, because it is contrary to nature and physical facts; a superstructure, to be sound and permanent, *must have* all the essential materials to make it so, otherwise, it falls before its time.

Unless the physical frame of a child is well built up from infancy, the osseous, muscular, and nervous system *must* suffer. If parents do not ensure to their offspring a sound constitution as far as it is

practicable when young, how is it to be expected they are to encounter the various progressive contests, or conflicting mental and physical changes (to which most people may be liable,) in their struggles for a high, social, and pecuniary position in life? A lady with whom the author was acquainted some years ago, and who had lost several daughters at an early age, expressed an opinion to Sir Astley Cooper, that it appeared more difficult *now* to rear young females to maturity than it was when she was young! Sir Astley said, "We can trace much of evil to that fatal system of bringing up young people, miscalled '*education*,' in which a delicate and a pale cheek are considered highly engaging, and a portion of the PERFECTION of female training in boarding schools; and where a firm, balanced constitution, and rosy cheeks, are scoffed at as the essence of ignorance and vulgarity; when SUCH convictions predominate in the mind, what CAN be expected but suffering, sorrow, and an early death?"

I have given in a preceding chapter some pretty strong evidence from the census of the Registrar General, of the necessity of having GOOD and PURE air for children, and the consequences when this is

neglected. Dr. Keenan, whose lectures some few years ago in England created much discussion amongst thinking minds, gives it as his conviction after years of study and experience, (and his lectures only confirmed previous convictions on my own part,) that "parents and educators of children, when desirous of making them CLEVER, and exhibiting *precocious* talent, generally *overwork the brain*, and consequently create premature age and general decay of the constitution." We all know that *sensibility if too much drawn upon loses power*, and requires rest and proportionate quietude to recover. It should be borne in mind, that in proportion to the intensity with which the function of a part is performed, is its supply of blood: thus, the brain always in action, four times more blood *circulates* there than in any proportionate weight of the body: *Overwork or strain* any portion of the physical frame, and the results are oftentimes most serious, *and why should the brain alone be exempt from similar consequences?*

In preceding chapters I have referred to *constitutional* peculiarities as giving rise to deficient or diseased action of the vessels supplying the teeth, and the consequences of their early decay and loss.

It should ever be borne in mind, that the human body is of course subjected to *positive* laws, the infraction of which entails permanent evils; and individual or general inferiority in the osseous, muscular, or nervous system manifest themselves in a variety of ways. In remarking upon the necessity of a sound physical structure of the body, I cannot help suggesting here the utility of not only taking suitable food and exercise, but also the necessity of young people resorting to all useful adjuncts to establish the soundness of the physical frame, such as OPEN AIR exercise, *gymnastic training*, *bathing*, &c. As Mons. Foucart, of Glasgow, truly says, "past and modern experience—the works of Delpech, Clias, Amoros, and Jules Guerin—incontrovertibly prove, that a regular and systematic course of gymnastic training is one GREAT means of strengthening the weak and improving the strong, and, while imparting strength to the constitution, giving an easy and manly carriage, and in a great degree removing tendency to scrofulous and consumptive habits." I think that it is pretty generally acknowledged that the physical and mental culture of children is not what it might be: it is a fact, that the parents and teachers who

neglect the physical frame, and who overwork the brains of children, entail upon them lasting evils. This truth should be promulgated in every corner of the empire, where hard study, and INTENSE mental exertion of any description are manifest. The TOO EARLY working of the young brain has sent thousands of children to an early grave, or has so injured their constitutions, as to prevent the combined exhibition of that vital vigour of intellect and sound physical frame so essential for the health, comfort, and happiness of the individual. In constant OVER-STUDY *you draw to the brain* that VITAL FORCE which should be allowed to circulate freely through the whole system to support sound bodily energy. What is the result to the poor precocious child when this error has been committed—what does he present? A painful mock exhibition of an *inferior adult mind.* Mistake it not—do not imagine that these fatal exhibitions of young hard-worked brains is GENIUS! There may be manifested great power of application—great facility to IMITATE, but the *combinations* requisite for the production of *creative powers* are rare indeed, and even when there is evidence that the germs exist, beware lest the *desire* to *exhibit*, does not induce

you to make (what should be a blessing) a bitter and fatal infliction! Again, by this *over-study*, is not *time* lost? for the poor fated child is often obliged to have, sooner or later, a long period of relaxation from its previous exhaustion, and even after years of unremitting attention on the part of deploring friends what is exhibited—what does he become? a plant grown stunted in an unhealthy soil —a "being intended for the reception of exquisite enjoyments, reduced to a shadow"—a mere physical shell, which even the winds of heaven, if they come in contact with too rudely, crush into dust; where are THEN the dreams and aspirations, the bright hopes and expectations for the future? you have destroyed the *conditions* essential to the physical and mental happiness of your child, and you may look in vain for a sound and healthy frame, when the very elements essential for its support are wanting.

In continuation, I impress upon parents' and teachers' attention, the following anecdote of a talented advocate of sound physical education. Dr. Wigan, who in his remarks upon insanity, thus alludes to the consequences of *over-working* the human brain, and to the error of one of Great Britain's statesmen upon this subject:—

"Never did man go so near to destroy the intellect of his son, by over-mental excitement, as the Earl of Chatham. 'Courage my son,' said he in one of his letters, when the poor lad was complaining of the enormous variety of topics urged on his attention, 'courage my boy, *remember there is only the cyclopædia to learn!*'

"William Pitt was very near falling a sacrifice to his father's ambition. Great as were his talents, I do not doubt that they would have been MUCH GREATER, had they been more SLOWLY educated; and he might have attained the ordinary term of human life, instead of *his brain wearing out his body* at so early an age. To see him as I have done, come into Bellamy's after the excitement of debate in the House of Commons, almost in a state of collapse, that with his uncouth countenance, gave the air of insanity, swallow a steak without mastication, and drink a bottle of port wine almost at a draught, and BE THEN rarely wound up to the level of ordinary impulse, repeat this process twice, or even three times in the course of the night, was a frightful example of *over-cultivation of brain, before it had attained its full development.* So much had its excitability been exhausted, by premature and

excessive moral stimuli, that when his ambition WAS sated, it was incapable of even keeping itself in action, without the physical stimulants I have spoken of. Men called this sad condition and exhibition, '*the triumph of mind over matter!*' I call it *the contest of brain and body, where victory is obtained at the sacrifice of life!*"

In regard to the physical frame, DIET is an important feature, and there is great folly in not giving children *sufficient* nutrition, (as is sometimes the case with young females,) from the fear of becoming what is called "fat" and "plump." The mass of the blood circulates through the whole of the body in about two minutes, and in proportion to its requisite QUANTITY and QUALITY, will the arteries deposit the essential nutrition, or elements of bone, muscle, nerves, &c. According to this quantity and quality of food, *structural alterations* ensue, and the functions of the body are more or less perfectly, or imperfectly performed. Be not surprised, then, to see *children's teeth* conforming to the laws of nutrition, and where erroneous systems of physical development have existed, decaying and breaking away before the appointed time of nature.

CONSEQUENCES RESULTING FROM THE LOSS OF TEETH.

THE masticating power of the jaw, depends upon muscular action. Attached to the jaw-bones are some exceedingly powerful muscles, giving roundness to cheek, and more or less connected with muscles of throat, &c., assisting to give character to the parts. The muscles of the jaw are supplied with sensibility from the FIFTH nerve; the same nerve that gives the exquisite sensibility to the teeth. The muscles of the lower jaw are particularly attached to the muscles of the throat, and assist in pushing the throat upwards. To those who have lost their teeth, ("or to the aged, with whom the law of nutrition becomes altered, and elasticity is lost by deposition of rigid texture, the diminution of vital energies increasing as time marks out and stamps a new character for the

system,") it is essential that the great and necessary auxiliary of mastication, DIGESTION, comfort, appearance, and health, viz., *teeth*, should be supplied. As a general principle, we perceive that the *bones* bestow a particular character upon the body; such being the case, how essential that the *shape of the face* should not be allowed to change from its natural form, by the loss of teeth; a difference takes place in the action of the muscles, and alteration of maxillary, or jaw-bone, by the absorption of the alveoli or bone sockets. *There is a difference of nearly one inch and a-half in distance, between the two jaw-bones, when the teeth are out,* and the consequence is, THAT enormous amount of difference is lost in the action of the muscles. When the teeth are gone, there will exist a difficulty of masticating food, the face shrinks, the lips appear thin, wrinkles prematurely arise, there is a bad articulation, the *stomach has a double office to perform,* (in consequence of the *solid food* passing into it without sufficient trituration,) and thus ensue injury to the digestive organs, dyspepsia, palpitation of the heart, headache, nervousness, and varied general derangement of constitution. *In addition, the adult mouth assumes of necessity, the*

limited action of the child's, being restricted to depression and elevation, (as there exist no teeth, the *lateral* motion of grinding the food does not ensue,) and the chin is consequently thrown forward, producing the appearance of old age, &c. Then the muscles of the jaws are changed from their intended natural position, and called upon to perform actions which are not in unison with the original anatomical arrangement; contracting some parts, pressing upon others, arresting the natural flow of blood, or action of nutritive vessels, producing stretching appearance of neck, throat, &c. We know not what serious organic changes may arise in the circulation of arteries, blood-vessels, and in the sensibilities of the nerves and surrounding parts, when this marked and injurious alteration in the mouth is allowed to take place, and permanently remain. When the back teeth, or molares, are gone only, the *front teeth have to perform undue and laborious action;* they must not only cut the food, but also attempt to GRIND with them, and the consequence is, that too much pressure falls upon them, they are thrown forward, and out of their natural position; generally irritation of membrane and gum ensues, absorption of bone and gums, then

decay, and loss of these front teeth. On the other side, every FRONT tooth that is lost, is a cause for indifferent articulation, as well as throwing pressure and friction upon side teeth; all this can be soon remedied by the use of artificial arrangements, and although we often hear unthinking persons exclaim, "What, wear artificial teeth? how dreadful!" as if it was not a sign of wisdom (instead of an error) in resorting to artificial means as a remedy for a great and serious evil to the human economy, viz., the *continued loss of teeth.* Thus, no fear of exciting ridicule, or chance of incurring absurd and unthinking remarks, should prevent any individual from wearing artificial teeth. Why, even the loss of *one* tooth, may derange, and ultimately destroy, the beauty of the dental arch! This simple fact, saying nothing of the serious evils I have stated, as likly to ensue from loss of teeth, will have, I hope, its proper weight with all those who have hitherto been prevented from resorting to the dentist, through fear, or anticipation of a "smile," or shrug of the shoulder, from some kind, but thoughtless friend.

MECHANICAL ARRANGEMENTS FOR IRREGULARITY IN CHILDREN'S TEETH.

This is an important subject, and one in which parents should take great interest. There is no mistaking the work of a practical dentist, when by attention and experience, he makes several deformed-looking teeth entirely change their position, and assume an agreeable and regular appearance. This is not to be done by disregarding the order and method of nature's "gradual and consecutive progress." The dentist who attempts to alter a deformed set of teeth in a great hurry, and with violence, generally produces permanent injury. Parents must remember as a principle, "*that you have no right to expect the work of years to be altered in a few hours' sitting.*" Some irregularities will take several months before a visible change takes place, while similar deformities in other mouths,

may be remedied in the same number of weeks. Never allow (if it can possibly be avoided) the first teeth of children to be extracted, *two or three years* before the permanent ones are to appear (*see the article upon first and second dentition*). When the teeth are coming up very much crowded, it is usual to extract the first small permanent double tooth on each side, so as to give room in the mouth; and never allow the eye teeth to be extracted, if TIME will ultimately give sufficient space. The mechanical contrivances for the regulation of children's mouths are so various in form and adaptation, that I need not enumerate them here. If parents will only attend to the irregularity IN TIME, the most difficult cases may be remedied and improved, without pain to the child.

It must be perfectly understood, however, that unless the dentist is allowed to see the young patient, at least once or twice a-week, time, labour, and expense, are too often wasted. In no case do I consider it just in a dentist to charge for "VISITS" for irregularities. Most irregular cases will take from two to six months, to regulate properly; and the best and most satisfactory plan, is that by which a PRICE is named in the first

instance, and then there can be no dissatisfaction afterwards. The dentist should nearly know the time, experience, and attention, he will have to give, prior to altering the malformation of the mouth, and must regulate his charge accordingly. And if he charges for "VISITS," of course the expense to the parents may be considerable, especially when residing in the country.

MECHANICAL ARRANGEMENTS, AND RESTORATION OF TEETH.

MECHANICAL arrangements for the loss of teeth, can be supplied in a skilful and salutary manner, avoiding exposure of front fastenings, giving the size, shape, form, and colour, of the original teeth. And by the use of *incorrodible* mineral teeth, (which the author recommends as a general rule in his own practice, in preference to all others,) you may deceive most attentive scrutiny. Whether in the application of gold, silver, or ivory cases, the practical object is, not only to produce natural EXTERNAL appearance, but also correct adaptation to the parts, and to assist articulation and mastication. These desirable results are only to be effected by experience, and a correct study of each case. It is rather amusing to watch the varied advertisements for the supply of artificial teeth; some of the adver-

tisers, according to their *own* assertions, possessing ingenuity enough to make "CONTRIVANCES" (as they call them) "even *more natural* than natural ones." To dispute with such people is useless; they are in a similar condition to that peculiar state, or aberration of mind, "which only moves in a circle, and imagines it is advancing." This assumptive position MAY arise from a man forcing his mind, as it were, to credit what he really WISHES *to be*. Inventions are ever arising upon all subjects, and he is the practical deceiver, who elevates himself upon an assumptive pedestal, forgetting Æsop's fable of the mountain in labour, "dire was the tossing, deep the groans, and the result was a mouse." Bubbles ever rush in and destroy one another. In mechanical science, as in morals, new truths are being continually thrown into the great arena of progression, giving denial to the consequential vulgar lie of advertised *perfection*. It is only of late years that *science* has really turned its attention to the alleviating and removing deformity of mouth and teeth. The invention of the beautiful enamelled incorrodible artificial teeth, assisted by judgment and experience in fitting, is a great step in advance of the old English and French systems

of arrangements; other improvements may follow ere long, and prove that the practical application of science is exhaustless. I more particularly refer to this subject, in consequence of the injury the public and the dental profession have received, from puffing advertisers promising to do all things, even "*impossibilities.*" The present knowledge of mechanical dentistry, will enable us to accomplish a *great deal* for the comfort and appearance of a patient; but even in addition to all the knowledge that the dentist may bring to bear upon a case, the patient must still give SOME assistance to the practitioner. The first application of artificial teeth appears strange, simply from a foreign and extraneous body being placed in the mouth; this unpleasantness is, however, soon removed (in a day or two) by use, and so exceedingly comfortable at last, may a case become to the mouth, that I have often met with patients who, in the first instance, thought artificial teeth (in their particular cases) impossible to be arranged, after they had worn them for a short time, state, "that they would not part with their artificial teeth upon any consideration." In some cases IT IS *difficult* to establish artificial arrangements, owing to excessive irrita-

bility of the parts, and perhaps nervousness and impatience of the patients. (If the reader has perused the remarks upon *Nervous Influence*, in the preceding portion of this work, he will comprehend why this irritability and nervousness exist in one person, and not in another.) It does at times occur, that parties, because they do not find artificial teeth A PART of THEIR MOUTH, as they expected, at once despond and give up all notion of wearing them, when possibly the slightest alteration by a dentist, might at once remove the cause of complaint. I admit that in certain instances, it is rather difficult to enable some mouths to masticate with artificial teeth, as well as could be desired, yet even in such rare instances as these, artificial teeth may be worn with comfort, with much benefit to the health, and appearance of mouth and face. It must be borne in mind, that artificial arrangements, whether possessing hand fastenings, spiral springs, or supported in the mouth by suction, or as it is generally called, "capillary attraction," &c., are almost useless, unless perfect adaptation to the parts for which it is intended, practically exist. *Clever workmanship is one thing, and correct adaptation* to the peculiarities

of the mouth, is another. If the patient is placed under a conscientious practical dentist, there will be every chance of a comfortable fitting case, and the obligation of patronage will be repaid by considerate and experienced attention to the peculiarity of the temperament, the desires of the patient, and an increased permanency of comfort, and establishment of the arrangements. No artificial case should be considered *established*, until the patient ADMITS that it is worn with comfort and advantage, taking into consideration, that it is, after all, but a SUBSTITUTE. This practical result will mark the real difference between the empiric and the experienced dentist. To parties who are not desirous of going to the expense of gold cases, we would recommend a *pure white metal*, which never corrodes like silver, and in all such mechanical arrangements, is an excellent substitute for gold.

To clean artificial gold cases and mineral teeth:—

Take—

Prepared Camphorated Chalk,	Half an Ounce.
Fine Powdered Pumice Stone,	A Quarter of an Ounce.
Carbonate of Soda, . .	A Dessert Spoonful.

Mix with sufficient water to make a paste, place it on the teeth at night, and wash well off with your tooth brush in the morning, then dip your case in water, in which five or six drops of acetic acid have been mixed, to prevent tartar forming upon your case.

To clean bone pieces :—

Take—

Prepared Camphorated Chalk,	Half an Ounce.
Carbonate of Soda, . .	A Dessert Spoonful.

Wet your tooth brush, and clean the case with this powder at *bed-time*, wash it well, and then put the case in a tumbler of spirit of wine and water, to keep the bone hard.

ARTIFICIAL PALATES.

There are various mechanical contrivances for remedying this unfortunate disease, (perforation, or fissure of the palate,) either by a single or double convex gold, silver, or palladium, or bone, plates, secured in its place by sponge, or india rubber, or bone, or attached to the double teeth. No two cases are alike, and consequently, whether attached by sponge, or india rubber, or wings, or caps, or bands and springs, or whether portions, or the whole of the fissure, from the lips to the uvula, are enclosed with an air tight palate, they must be regulated by the peculiar circumstances of the case. Fissure of the palate, when extending through the bones, or forming an aperture into the nose, cannot be cured, and can alone be remedied by one of the various means suggested. When the fissure extends into the nose, and the upper front teeth are

deformed or lost, artificial teeth can be easily attached to the metallic plate, and the deformity to a great extent removed, articulation improved, and greater comfort in eating, drinking, and appearance ensured.

EXTRACTION OF TEETH.

THERE have been considerable disputes, even with the most scientific practitioners, regarding extraction of teeth by the *forceps*, or the *key instrument*. My own experience is in favour of the NEW *invented forceps*, whether for front or back teeth. I prefer an instrument like the FORCEPS, which (in the hands of a practitioner who understands its use) can do *no serious mischief*, to that of the key instrument, which even by the most experienced dentist, MAY occasionally, and does too often, produce *serious consequences*. The forceps is, from its construction, *more fitted* to raise a tooth in conformity with its axis, than the key instrument, and consequently the diverging fangs of teeth are met accordingly. With the key instrument, the gum must be well lanced, and almost always a portion of alveolar process comes away with the

teeth. The FORCEPS, on the contrary, close upon the neck of the tooth, simply removes the gum away without cutting it, and extracts without breaking away the bone of the process. In addition, the forceps does not produce the intense pressure upon the gum, and in most cases the extraction is performed by ONE steady perpendicular elevation, or depression of the instrument. The extraction is much easier when the shape of the FORCEPS corresponds with the form of the tooth to be extracted.

Of the danger of the indiscriminate use of the key instrument, there can be little doubt. Mr. T. Bell, surgeon-dentist of Guy's Hospital, relates an instance of the folly of violent use of the KEY:— "A gentleman had FOUR TEETH loosened, the bone process of one side of the mouth broken, and at last, after great ulceration of the jaw, and suffering on the part of the patient, he was cured with the loss of FIVE TEETH, and the marks of an external deep impression on the cheek, left there for life! Another, of a man who was admitted into Guy's Hospital, suffering severely from the extraction of a double tooth. Extensive abscess, with FIVE openings, ensued, and after a few weeks' suffering,

more than half the side of the jaw came away." I have myself seen great injury and suffering produced upon patients, by an INSISTING force with the key instrument; and in one instance, it has left a perfect hole in the cheek of a youth, from abscess and exfoliation of bone; in another instance, was the primary cause of disease and death. The strongest advocates of the key instrument, only demand its use NOW, when there is extensive decay on one side of a tooth, so that there is no purchase for the forceps, *and then the utmost* care *should be taken that the fulcrum is placed correctly;* if placed too high, the tooth breaks, and if placed too low, the alveolar process of the jaw is liable to splinter. The KEY does not occupy the rank *it once did* in the eyes of the dental profession, and if the medical profession would *publish* some of the facts that come under their observation, in regard to CONSEQUENCES resulting from extractions by the key instrument, I am quite certain, even more attention would be paid to the use of the FORCEPS. In country districts, the forceps are seldom or never used for double teeth. These views, regarding the superiority of the forceps over the key instrument, are not given with any invidious opposition

to parties who do not use the forceps at all, but simply to convey my convictions to the reader, that one instrument is much more safe in its GENERAL application, than the other. I may remark here, that *in no instance*, should parents allow children's first teeth to be extracted with the key instrument. I am aware, also, of the opposition these opinions will receive from the *old friends* of the key instrument, for, as Locke says, "new opinions are always suspected, and usually opposed, sometimes without any other reason but because they are not already common; but truth, like gold, is not the less so, from being newly brought out of the mine;" but with this opposition, I have nothing to do. I give my personal experience upon the subject, and few persons who have had to endure extractions under the *leverage* pressure upon the gum, by the key instrument, will easily forget the too often protracted *wrench* which takes place.

PIVOTING TEETH.

This is a most delicate operation, and in some cases a very difficult one. The best and most successful operation, is that by which the body of the tooth has been for some months destroyed, and the nerve of the tooth absorbed; when such is the case, and the *stump is* SOUND, you can easily make a sufficient length of pivot to hold the artificial tooth in its place for years. When the nerve is not absorbed, it is generally a rather painful operation to destroy it, and drill a sufficient depth of hole in the sound fang, to hold the tooth. If you find, upon placing a small instrument into the centre of the decayed tooth you wish pivoted, that pain ensues, you can either at once allow the nerve to be destroyed, or attempt to absorb the nerve yourself, by several days' application of oil of cloves, catechu, nitrate of silver, &c. It very often occurs,

that after the tooth has been cut away to the gum, and the nerve destroyed, there arises a small tumour, or swelling of the gum, upon the stump left in the alveolar process; this is easily removed by a leech or two. These pivoted teeth can either be of natural or mineral teeth, according to the peculiarity of the bite upon the lower teeth, and other circumstances. Too often patients, upon breaking off the crown of a tooth, are so anxious for the vacancy to be filled up, that they do not give the dentist sufficient time to make a perfect pivot case. It very often occurs, that patients are nervous in relation to "pivots" dropping out, and are for ever taking them in and out to clean, &c. This is almost fatal to a pivot case; the more a pivot is taken out, the *larger the cavity becomes*, and although the stump can be kept clean, and somewhat hardened, by inserting *spirit of wine* occasionally, yet, with all your care, if you persist in taking out your pivot too often, it will eventually have to be replaced by a small gold case.

When the stump of a tooth, after cutting and filing down to the gum, is very tender, and the least cold affects it, rub spirit of wine, catechu, or quick drying spirit varnish upon the stump, or

keep cotton wool, dipped in spirit, continually applied for a few days.

A remedy when there is pain in the stumps and gums :—

Take equal parts and mix—

Spirit of Camphor.
Tincture of Opium.
Tincture of Myrrh.
And Com. Tincture of Benzoin.

Clean, and gargle the stumps and gums occasionally.

LEECHING THE GUMS.

Leeches are often of essential benefit, when the gums are in a swollen state, and there is pain in the teeth and membranes; but care should be taken that the leech does not take hold of the lip, instead of the gum. When a leech glass is used, if the glass is not large enough for the leech in its expanded size, when full of blood, and the leech takes hold of the lip or cheek, generally, in such case, ecchymosis, or extraction of blood, ensues; and there will arise a dark purple tinge upon the skin, and with some patients, I have known this discolouration remain for several weeks; and with others, when of an inflammatory constitution, erysipelas has occurred. This discolouration may be gradually removed by the use of cold stimulating lotions. Before applying a leech, lay it upon a dry towel for a minute or two, wipe the gum dry,

and touch it with milk, or the point of a needle. If the bleeding does not cease for some time after the leech has dropped off, the puncture may be kept pressed with lint, dipped in strong alum water, or warm turpentine, or in the tincture of sesquichloride of iron, or touch the bite with lunar caustic. *It is wise, in all cases, to stop the bleeding of leeches before bed-time, especially with young persons and invalids.* The size of a *medical leech,* is about two or three inches; the body is of a black brown colour, with six yellow spots, edged with a yellow mark on each side. If a leech adheres longer than requisite, touch the head with salt or vinegar. If the leeches are difficult to be obtained in your locality, and it is imperative for one to do the work of two or three, put the point of a sharp lancet, or knife, through the tail, and the leech will go on sucking, and the blood dripping from the tail as long as you require; and when you wish to take the leech away, *do not pull it off,* but as I have said above, touch the head with *salt* or VINEGAR, and it will drop off at once. When the leech has been removed, rinse the mouth with warm water, (not too hot,) for several minutes. The average quantity of blood removed by a leech and

warm water, is about one drachm. No fear of syncope need occur, even by using eight or twelve leeches to the gums or palate, as it will require the extraction of some ten to fifteen ounces of blood, to produce fainting in a healthy adult. In all such cases, however, it is better to be regulated by the advice of your medical attendant. When by accident a leech goes down the throat, or adheres to the tonsils, or any part *not desired*, gargle the mouth with strong vinegar and water, or swallow a glassful of salt and water immediately; or should it attach itself in the nostril, a lotion, composed of nitre and vinegar, will remove it.

A LIST OF REMEDIES FOR DISEASE OF TEETH AND GUMS.

TO BE KEPT IN THE HOUSE.

The reader, if reference is made to the various chapters, or subjects treated upon, will find remedies for particular conditions of gums and teeth. But it may be useful for *families* residing in the country, and who are some distance from medical aid, to keep by them some of the following remedies for toothache, loose teeth, tartar, painful gums, &c. For their application refer to the subjects treated upon in this work.

Cajeput Oil.—For toothache. To be placed in the decayed cavity of a tooth, several times a-day, with cotton wool.

Catechu and Kino.—For ulcerated gums.

Tannin.—For toothache and diseased gums.

Laudanum.—For toothache and pain in gums.

Oil of Cloves.—For toothache. To be ONLY placed in the cavity of a bad tooth.

Gum Mastic.—Pour a few drops of camphor spirit upon a grain or so, wet a small piece of cotton wool, and place in the decayed tooth, and keep it there, until the dentist can stuff it.

Solution of Nitrate of Silver.—For toothache, or inflamed ulcered gums. Use carefully with cotton wool, or small paint brush.

Carbonate of Soda.—Gargle the mouth, night and morning, with soda and water, to destroy acidity.

Poppy Heads.—For fomenting the face, when swollen from toothache.

Decoction of Bark.—Used as a gargle for gums.

Alum Water. do. do.

Spirit of Camphor. do. do. and place also into the cavity of a decayed or painful tooth.

Tincture of Myrrh.—Used as a gargle for the gums.

Chloroform.—Placed in the cavity of a diseased tooth, it will sooth and destroy the nerve.

A Leech Glass.

A Gum Lancet.

Lint and Cotton Wool.

Prepared Chalk.—For a general tooth powder, when the teeth and gums are in a healthy state.

Camphorated Chalk.—To be used occasionally as a tooth powder, when there is a tender and spasmodic sensation of gums and teeth.

Cream of Tartar.—To be used occasionally when the teeth get black with depositions and tartar.

A small quantity of some, or even all of the articles enumerated, would cost but a few shillings, and where there is a family of children, &c., and medical assistance is at a distance, the application of such remedies will save *many hours of pain and misery.*

It often occurs, that at one time a particular oil or spirit will remove *toothache,* which is quite ineffectual upon other occasions. Therefore, *keep several remedies in the house,* as a general rule. If anodynes, narcotics, and poultices, will not remove pain in the teeth, resort to stimulants, rubefacients, and aperient medicines.

For the general USE of camphorated chalk, I am not an advocate, as tooth powders should be adapted to the peculiar state of the teeth and gums. In regard to *mineral* and *acid* tooth powders, the LESS they are used the better.

THE DISCOVERY OF ETHER AND CHLOROFORM.

THE discovery of these valuable anesthetic agents in 1846 and 1847, by Drs. Morton and Jackson of America, and Dr. G. Y. Simpson, M.D., of Edinburgh, respectively took the world by surprise. The attempts which have been made to depreciate or deny their value, as means of removing pain under serious surgical operations, are not worthy of being mentioned *in comparison* with their extensive application in Great Britain, America, and on the continent. The first public intimation in this country of the discovery of ether as an anesthetic agent, was in the pages of the British and Foreign Medical Review; and it may be agreeable to my readers to learn some of the original opinions entertained upon the first practical use of ether as "an agent by which human agony may be prevented in surgical operations."

A NEW MEANS OF RENDERING SURGICAL OPERATIONS PAINLESS.

(*From No. XLV. of the British and Foreign Medical Review.* Edited by John Forbes, M.D., F.R.S.)

Just as our last proof was passing through our hands, we received from our medical friends in Boston the account of a matter so interesting to surgeons, and indeed to every one, that we take the opportunity of introducing it here. We know nothing more of this new method of eschewing pain than what is contained in the following extracts from two private letters, kindly written to us by our excellent friends, Dr. Ware and Dr. Warren, of Boston—both men of the highest eminence in their profession in America—and we may truly say, in Europe also. It is impossible, however, not to regard the discovery as one of the very highest importance, not in the practice of operative surgery only, but also, as Dr. Ware suggests, in practical medicine also. We trust our friends will forgive us for putting into print their private communications. The importance of the subject, and the necessity of authenticating the statements, are our excuses. The authors of the discovery are Dr. C. T. Jackson and Dr. Morton.

Boston, *November* 29.

"I found on my arrival here, a new thing in the medical world, or rather the new application of an old thing, of which I think you will like to hear. It is a mode of rendering patients

insensible to the pain of surgical operations, by the inhalation of the vapour of the strongest sulphuric ether. They are thrown into a state nearly resembling that of complete intoxication from ardent spirits, or of narcotism from opium. This state continues but a few minutes—five to ten—but during it the patient is insensible to pain. A thigh has been amputated, a breast extirpated, teeth drawn, without the slightest suffering. The number of operations of various kinds, especially those in dentistry, has been very considerable, and I believe but few persons resist the influence of the agent.

"The effect is not exactly the same on all. In some the insensibility is entire, and the patient is aware of nothing which is going on; in others a certain degree of the power of perception remains, the patient knows what the operator is doing, perceives him, for example, take hold of a tooth and draw it out, feels the grating of the instrument, but still has no pain.

"There are no subsequent ill effects to detract from the value of this practice, none even so great as those which follow a common dose of opium. One person told me she had some unpleasant sensations in the head for a short time, and was weak, languid, and faintish through the day, but not more so than she ordinarily was from having a tooth drawn. Another told me that he experienced something of the same kind, and, in addition, that his breath smelt very strongly of ether for 48 hours, and was indeed so strongly impregnated with it as to affect the air of the room in which he sat, so as to be disagreeable to others.

"One of our best operative surgeons informs me that he regards it as chiefly applicable to cases of the large and painful operations which are performed rapidly, and do not require any

very nice dissection; but that for the more delicate operations, which require some time, he would prefer to have the patient in his usual state. But it is impossible at present to judge what will be the limits to the application of such an agent. Objections may arise of which we do not dream, and evils may be found to follow, which we do not now perceive. Still it certainly promises much in surgery, and perhaps may be capable of application for other purposes besides the alleviation of pain. Would it not be worthy of trial in tetanus, in asthma, and in various cases of violent internal pain, especially from supposed spasms?

"It was brought into use by a dentist, and is now chiefly employed by that class of practitioners. He has taken out a patent for the discovery, and has despatched persons to Europe to secure one there also; so you will soon hear of it, and probably have an opportunity of witnessing its effects.

"Faithfully yours,

"JOHN WARE."

"BOSTON, *November* 24.

"YOU may have heard of the respiration of ether to prevent pain in surgical operations. In six cases I have had it applied with satisfactory success and no unpleasant sequel.

"I remain, &c.,

"JOHN C. WARREN."

Upon the appearance of these, and other articles,

in the "Times Paper" of December, 1846, an extensive use of ether was commenced in private practice, and at the "hospitals," and in almost all cases, was successful; thus establishing the fact, "that the application of ether to the lungs, for surgical purposes, was a boon to suffering humanity.

> "Honour and fame and high reward be thine,
> Who took from pain and agony the sting;
> And o'er a world of sorrow thus can fling
> A sweet forgetfulness."

Amongst the varied peculiarities arising from the application of ether, perhaps those elicited at the March sittings of the Paris Academy of Science, are not without their importance. M. Roux stated:—

> "That in some cases the patients lose the equilibrium of motion without the slightest disturbance of the intelleet, and that the suffoeation from ether *differs from all other*, and particularly from that eaused by the vapours of chareoal, in whieh the blood, completely deprived of its oxygen, is blaek, whereas, with all the persons whom he had etherised, the arterial and venous blood retained *the natural colour*. The blood, however, according to MM. Lenoir, Voillemier, and many other surgeons, has greater fluidity than when in its normal state."

While the proprietor of the patent of the "Letheon" was asserting his "rights" and demanding justice from the profession and the public, many claimants were stepping forward to supersede the American ORIGINALITY of the discovery of ether for surgical purposes—the American "Letheon" was totally neglected, and medical men and instrument makers prosecuted their inquiries upon the subject; and innumerable forms of apparatus were devised for conducting the inhalation. About the same time, the following remarks appeared in "*Galignani*," at Paris:—

INHALATION OF ETHER.

"IT appears that the first diseovery of the means of destroying sensibility to pain, by the inhalation of gas, was by an *Englishman*, and nearly twenty years ago. At a recent sitting of the Academy of Medieine at Paris, M. Gérardin, one of the members, stated that soon after the foundation of the Academy the subjcet was brought before it, and on searching the minutes there has been found a notiee, that on the 3d of Septcmber, 1828, a communieation was made, to the effeet that an English medieal man, named Hiekmann, had discovered that the inhalation of eertain gascs had the effeet of destroying sensibility to pain, and that he had proved the faet by repeated experiments on living anims. The miuutes of the sitting s tate that

Dr. Hickmann had submitted his discovery to Charles the Tenth, with a request that he would take it under his patronage, and the application was referred by the Minister of the King's Household to the Academy of Medicine, where a report was made upon the discovery, by M. Gérardin. Unfortunately, the letter of Dr. Hickmann, which was communicated to the Academy, has not been preserved, and the minutes of the sitting of September 3, 1828, do not state the name or nature of the gases employed by him. M. Gérardin, however, has informed the Academy that, if his memory does not deceive him, one of the gases mentioned was, the *protoxide of azote*. These facts, incomplete as they are, still seem to leave no doubt of the priority of the discovery being English; but they do not in the slightest degree detract from the merit of Dr. Wells, who made the same discovery in America. It is evident that if he had known any thing of the communication to the Paris Academy of Medicine, he would not have allowed so many years to pass, without making use of the discovery, and the philosophical reasoning which, according to the letter from him, published in the *Messenger*, led to his discovery, proves that although the idea was not as he supposed, new, it was so to him, and would have been so considered by all the world, but for the fact which has recurred to the mind of M. Gérardin. Since our last notice of the effects of the inhalation of ether, several more experiments have been made with it in the hospitals of Paris, and we have not heard of any fatal results which can be attributed to the inhalation. In one case an operation was performed upon a young musician of great talent, who was afflicted with fistula of the most marked and dangerous nature. The ether was administered, and the operation was performed.

About a minute afterwards, the patient recovered consciousness, and was asked if he had experienced any pain. He replied, "Not the least; on the contrary, I have had some delightful dreams." It was, indeed, with difficulty that he could be made to believe that the operation had taken place. An attempt has been made to throw discredit upon the discovery, by stating that in two or three cases death has followed the operations, but this might have been the result if the ether had not been administered. It is not pretended, we believe, that the inhalation can render a *dangerous operation a safe one.* All that is asserted is, that it spares the infliction of pain and anxiety, and this alone must in many instances be conducive to the good of the patient, for in some operations the mind suffers to such an extent as to act powerfully and dangerously upon the body.

As doubts existed in France, relative to the safety of using it, several "prisoners" offered to take "ether" on condition of being pardoned after the Faculty had experimented upon them. In one instance, a man condemned to death by the Court of Assizes of the Ardeche, petitioned the minister of justice to be permitted to undergo his punishment by inhaling ether, believing death, by such means, to be without pain.

Upon the first week of the introduction of ether in England, and having found from several successful experiments in extraction of teeth, that it was an important agent for removing pain, I called

with my friend W. Wood, surgeon-dentist of Brighton, upon Mr. Dorr, at Duke-Street, St. James', London, for the purpose of ascertaining how far the discovery could be justly promulgated and used in England. This gentleman was the proprietor of the "American and English Patent of the *Letheon*," (the "Letheon" is the American name for the invention, "the application of ether to the lungs for surgical purposes.") We found this gentleman very indignant that the "invention" should be, as he said, "STOLEN" by the medical profession, without paying the least attention to the patent rights of the original inventor, assuming as a principle, "that if patent rights WERE recognized as MORAL RIGHTS in England, the profession ought not to neglect the principles upon which all patents are recognized." As the patent right was saleable, my friend paid for the "patent" upon principle, and with it the right to extract teeth in Brighton. I believe he was nearly the only professional man who did so, and I was much pleased to find afterwards, that he had been, perhaps, the most successful operator upon teeth in the world, under the influence of ether, having carefully exhibited ether, and afterwards chloroform, in the

short space of the first six or nine months of their discovery, to more than eighteen hundred persons, and upon almost all occasions, in the presence of the medical men of Brighton, with most complete success.

So strongly did I feel the value of making this discovery public at once, that I offered to Mr. Dorr, to extract teeth publicly at the Polytechnic Institution, London; Dr. Ryan, who was then lecturing there upon chemistry, consenting to assist the public exhibition, by administering the ether to the patients, and thus to remove the popular fear which had been created by all sorts of extraordinary rumours about the great danger of ether as an anæsthetic agent. While Mr. Dorr, however, was QUIETLY preparing his "Letheon" for the sovereigns of Europe! and waiting for the medical profession to assist his patent, the inventive energies of many talented men were being employed to discover some "agent" less irritating, &c., to the system than "ether," during its inspirations.

Dr. Simpson, of Edinburgh, was at this time engaged in various experiments upon the subject, and to his perseverance and genius, we are indebted for the invaluable discovery of "chloroform;" *an agent possessing all the most desirable properties of*

ether, without its objectionable qualities. Dr. Simpson has published several accounts of this substitute for "ether," and to those of my readers who have not met with them, I submit the following extracts.*

"Chloroform was first discovered and described at nearly the same time by Soubeiran (1831) and Liebig (1832); its composition was first accurately ascertained by the distinguished French chemist, Dumas, in 1835. It has been used by some practitioners internally; Guillot prescribed it as an anti-spasmodic in asthma, exhibiting it in small doses, and diluted 100 times. But no person, so far as I am aware, has used it by inhalation, or discovered its remarkable anæsthetic properties till the date of my own experiments.

"It is a dense, limpid, colourless liquid, readily evaporating, and possessing an agreeable, fragrant, fruit-like odour, and a saccharine pleasant taste.

"As an inhaled anæsthetic agent, it possesses over sulphuric ether the following advantages:—

"1. A greatly less quantity of chloroform than of ether is requisite to produce the anæsthetic effect; usually from a hundred to a hundred and twenty drops of chloroform only being sufficient; and with some patients much less. I have seen a strong person rendered completely insensible by six or seven inspirations of thirty drops of the liquid.

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* The publications of Dr. Simpson and Gregory, should be read by all persons taking an interest in these anæsthetic agents; they are well worthy the study of scientific minds.

"2. Its action is much more rapid and complete, and generally more persistent. I have almost always seen from ten to twenty full inspirations suffice. Hence the time of the surgeon is saved; and that preliminary stage of excitement, which pertains to all narcotizing agents, being curtailed, or indeed practically abolished, the patient has not the same degree of tendency to exhilaration and talking.

"3. Most of those who know from previous experience the sensations produced by ether inhalation, and who have subsequently breathed the chloroform, have strongly declared the inhalation and influence of chloroform to be far more agreeable and pleasant than those of ether.

"4. I believe, that considering the small quantity requisite, as compared with ether, the use of chloroform will be less expensive than that of ether; more especially, as there is every prospect that the means of forming it may be simplified and cheapened.

"5. Its perfume is not unpleasant, but the reverse; and the odour of it does not remain, for any length of time, obstinately attached to the clothes of the attendant,—or exhaling in a disagreeable form from the lungs of the patient, as so generally happens with sulphuric ether.

"6. Being required in much less quantity, it is much more portable and transmissible than sulphuric ether.

"7. No special kind of inhaler or instrument is necessary for its exhibition. A little of the liquid diffused upon the interior of a hollow-shaped sponge, or a pocket-handkerchief, or a piece of linen or paper, and held over the mouth and nostrils, so as to be fully inhaled, generally suffices in about a minute or two to produce the desired effect.

CHEMICAL CONSTITUTION OF CHLOROFORM.

"Formyle is the hypothetical radical of formic acid. In the red ant (*formica rufa*) formic acid was first discovered, and hence its name. Gehlen pointed it out as a peculiar acid; and it was afterwards first artificially prepared by Doebereiner.

"Chloroform, chloroformyle, or the perchloride of formyle, may be made and obtained artificially by various processes,—as by making milk of lime, or an aqueous solution of caustic alkali, act upon chloral,—by distilling alcohol, pyroxylic spirit, or acetone, with chloride of lime,—by leading a stream of chlorine gas into a solution of caustic potass in spirit of wine, &c. The preparation which I have employed, was made according to the following formula of Dumas:—

"℞ Chloride of Lime in powder, . lb. IV.
Water, ... lb. XII.
Rectified Spirit, . . . f ℥ XII."

By this grand discovery of "chloroform," (which has almost superseded the use of ether,) Professor Simpson has immortalized his name, and conferred inestimable benefit upon society. For *extraction of teeth* I never ADVISE the use of ether or chloroform as a GENERAL principle, neither do I ever sanction its use with children for their *first teeth*. Some practitioners have been fortunate and some *most unfortunate*, in the exhibition of ether and chloroform; but whether it be given in graduated doses,

suited to age and sex and constitution, or whether the patient be struck down by an overpowering dose at once, no one should take ether or chloroform without the sanction of his or her medical attendant. I have been fortunate myself in its exhibition, but still I would suggest to all parties who are at all *doubtful* of their state of health, and who possess the *moral courage* to have teeth extracted, without taking ether or chloroform to do so. If they take chloroform, let it be with a *cone-shaped sponge*, or the "instrument," as sold by "Hoopers" of Pall Mall, London, and not with a handkerchief; *and let the chloroform be pure!*

The very sound of "chloroform" to some persons appears to produce a nervous dread, it may be from reading accounts in the papers as to its use in robberies, &c. An article appeared some time ago in the "Times," from a "Chemist," upon this subject, and as it appears feasible I give it to my readers.

ALLEGED USE OF CHLOROFORM.

I HAVE seen several cases reported lately of persons having been rendered insensible by a cloth drawn over the face, which is generally ascribed to chloroform. Now, experience shows us that such a very instantaneous effect is not produced by this

agent; but lately I was applied to for a liquid which I have known to occasion immediate insensibility by strongly smelling the bottle it was in; and no one could withstand its overpowering and suffocating influence when applied on a handkerchief suddenly to the face: it is the *Liq. Ammon. Fortiss.*, found in every Druggist's shop.

The person who applied to me for it was a tall man, in a smock frock, and stated he wanted it for a giddiness in the head. (Bosh!) I of course refused the sale of it, and warn all Druggists to do likewise, as I believe this to be the agent—and a most sure and effectual one it is—used on the occasions I have alluded to.

Dr. W. Gregory, professor of chemistry, lately read before the Royal Society some valuable investigations on the purification and properties of chloroform. I *particularly* refer my readers to the portion of these notes which relate to the sale of *impure chloroform*—see section 4 and 5.

PURE AND IMPURE CHLOROFORM.

"1. CHLOROFORM has been prepared both from alcohol and wood-spirit. The latter has been used for the sake of cheapness; but as it is a mixture of several liquids, all of which do not yield chloroform, it gives an impure product, in a proportion which varies much, but is always below that obtained from alcohol. There is therefore not only no advantage, but the contrary, in using wood-spirit, which is not, after all, much cheaper than alcohol.

"2. But the chloroform from these two liquids, *when fully purified*, is quite identical in all its properties. Its smell, density, boiling-point, and action in the system, are in both cases exactly the same. That from alcohol is no doubt more easily purified than the other, but it also contains certain volatile oily impurities, which must be removed before it can be safely used. The peculiar oils which adhere to both kinds of chloroform are not identical, or at least not all identical, but they are of analogous constitution and properties.

"3. Soubeiran and Mialhe have examined these oils. They contain chlorine, have a disagreeable smell, and when inspired or smelled cause distressing headache and sickness. In the case of wood-spirit, some of its own impurities distil over unchanged, and are also found in the chloroform.

"4. *It is well known that many persons, after the use of chloroform, have suffered from headache, nausea, and even vomiting, as I have more than once seen. Headache and nausea I have myself often experienced, when I have tried different specimens of chloroform, without taking so much as to produce the full effect.*

"5. *Perfectly pure chloroform does not, so far as I have seen or experienced, produce these disagreeable effects. It is therefore highly probable that when they occur, as they do with some individuals, from the use of chloroform of more than the average goodness of quality, they depend on the presence of a trace of these poisonous oils.*

"6. All good manufacturers of chloroform purify it by the action of oil of vitriol, which destroys the oils, while at the same time a part of the acid is reduced to sulphurous acid. The chloroform, to remove this, is then distilled with lime or carbonate of baryta, and is tolerably pure if the process be well conducted.

"7. But it is not quite pure, and contains a trace, more or less distinct, of the oils. I have found this to be the case with all the best chloroform made here up to 1849; and I have several times seen headache and sickness from the use of such chloroform, which was the best anywhere made. I must add, however, that the quantity of oils in the chloroform of the best Edinburgh manufacturers, although variable within certain limits, was always so small, that that product was fit for use, and only caused headache, &c. in a few peculiarly sensitive persons.

"8. Another test, still more delicate, I find to be the smell of the oils. When chloroform is poured on the hand or on a handkerchief, it rapidly evaporates; but the oils, being less volatile, are left behind; and their smell, previously covered by that of the chloroform, is easily recognized. Until very lately no chloroform was sold, or indeed known, which would stand this test, or even the former.

"While I acquit the makers of chloroform, who have sold an impure drug, of all desire or intention to adulterate it, I feel it my duty to point out, that the system which permits *any one* to set up as a manufacturer of this or any other potent remedy, without let or hindrance, without any test of his qualifications, without, in short, enforcing a knowledge of chemistry and pharmacy as an essential condition, is a radically bad one; and that our law, in relation to Druggists and Apothecaries, requires reformation. In fact, the evils naturally resulting from it are only neutralized, and that but in part, by the good feeling and principle of the leading manufacturers.

"To illustrate this, I may remark, that some of the makers of chloroform must have been very ignorant, even of what was

known and published concerning its properties; for, among the specimens I examined, are several of specific gravity below 1.480, which was long ago given as the standard, even so low as 1.347.

"That this neglect proceeded more from ignorance than from intention, is, I think, plain from the fact, that a specimen labelled "*Pure Chloroform,*" *actually contained only a trace, about one-thirtieth, of that substance.* I did not ascertain its specific gravity, which must have been far lower than 1.200 or 1.100—nay, possibly under 1.000, because its impurity was so obvious in every other respect, and the quantity I had was too small; but, on examining it further, I am convinced that its origin was this:—the maker, after distilling the materials, obtained, of course, two liquids, a lighter and a heavier. He evidently *did not know* that the latter was the chloroform, and therefore threw it away, and preserved the *lighter*—a mixture of pyroxilic spirit—of its natural impurities, of the deleterious chlorinated oils and a *trace* of chloroform. At least, such are its characters; and it exactly resembles what would be obtained in the way supposed. But what a fearful degree of ignorance (without any evil intention) is here exhibited! And yet this maker was free to produce and sell *pure chloroform*, which was actually almost *pure from chloroform*, and loaded with deleterious agents."

These notes of Dr. Gregory are important, they establish the fact that parties cannot be too careful WHO gives them chloroform, and the QUALITY of that chloroform. Important investigations are still going on in Paris and London, in relation to the

qualities and powers of different chloroforms. Dr. Snow, in particular, has given some useful tests for the presence of chloroform in bodies after death; and so delicate is this process, "*that he has been able to clearly detect the presence of the hundredth part of a grain of chloroform, when dissolved in a thousand grains of water.*"

In suggesting the use of "chloroform" for tooth-ache, it is not to be INHALED, but simply placed in the CAVITY of a decayed tooth, and rubbed on the gum with the finger. Chloroform should not be inhaled by persons unacquainted with its quality and powers; and not without the approval of their medical attendant. The following extracts from the *Times* of June and July, 1850, will be, I hope, sufficiently important to prove to those who rashly neglect this advice, that serious evils, if not death, may be the consequence :—

DEATH FROM CHLOROFORM.

ON Monday last a case illustrative of the fatal effect of the incautious use of chloroform occurred at Sheffield; the sufferer was a Mr. J. Smith, a young man of 21 years of age. Mr. Smith retired to rest on Sunday night, about half-past 11 o'clock, at the house of Mr. Ray. In the night he was heard to moan, but it was concluded he was dreaming. As he did

not appear at the usual time at the breakfast table, a domestic was sent to his bed-room, when he was found lying in bed, life being extinct. In his hands he held a handkerchief, firmly prossed to his mouth and nostrils. It appears the unfortunate gentleman has been in the habit of inhaling chloroform for the purpose of allaying the face-ache. A bottle which had contained chloroform was found uncorked in the watch-pocket of the bed, and in a private drawer two bottles of chloroform were discovered. An inquest was held on the evening of Monday, when evidence establishing the above account was given, and also that the deceased had several times, when he inhaled chloroform, directed William Girt, formerly groom to Mr. Ray, to sit with him, and to rouse him when falling into a state of insensibility, which he had accordingly done. The *post mortem* examination of the body showed the blood to be in a very fluid state and very dark in colour, the right cavities of the heart were distended with blood, the liver and kidneys slightly congested. No smell from which it could be ascertained that chloroform had been used could be detected. The deputy Coroner expressed his sympathy with the relatives of Mr. Smith, for whom he could feel most acutely, the case reminding him forcibly of the case of Mr. Walter Badger, his nephew, who died under similar painful circumstances in London. He had called upon Mr. Robinson, the eminent dentist, to have a tooth extracted, and, having inhaled chloroform previous to the operation, threw back his head, and died almost instantly. The jury returned a verdict that the deceased's death had resulted from chloroform, incautiously administered by himself.

Note.—These extracts are simply given as "warnings." There is no doubt but that Dr. Gregory's important discoveries will greatly remove the danger of inhaling "anæsthetic" agents.

DEATH FROM CHLOROFORM AT GUY'S HOSPITAL.

YESTERDAY afternoon an important investigation took place before Mr. William Payne, the Coroner for London and Southwark, and a special jury, in the board-room of Guy's Hospital, respecting the death of Alexander Scott, aged 34, a police constable of the R division, who died from the effects of chloroform while undergoing an operation for the removal of a portion of the right hand, which had been bitten by a man 13 months previously whilst on duty at Deptford. . . . . Amongst other important persons who gave evidence was Dr. Cock, senior surgeon at Guy's Hospital:—

Mr. Edward Cock said, the deceased was sent to him by a surgeon at Deptford for severe pain in the right hand. One of the fingers had been removed, and deceased suffered great pain at the stump. Witness found him to be a strong vigorous man. The bone was in a diseased state, as were also the nerves, producing very great tenderness of the arm and right side of the body. The only remedy was to remove the end of the bone and the diseased nerves. The deceased came into the hospital to have the operation performed; when deceased said, "I hope, Mr. Cock, you will give me chloroform, for I cannot bear the pain." Witness informed him that he would rather not use it, and endeavoured to dissuade him from taking it; but the deceased added that he had made up his mind to have it administered to him. Witness always objected to the use of chloroform, for it could never be given without some degree of danger. The ordinary machine was used, and, as it had not the effect, witness directed that a napkin should be folded into

the shape of a cone, which was applied with chloroform. The operation of removing a portion of the bone occupied one minute and a-half, but before it was completed, the blood which was gushing out suddenly stopped, when witness directed Mr. Lacy to feel the pulse of deceased, when they ascertained that the deceased had expired.

The Coroner,—What was the cause of death?

Witness,—The chloroform most undoubtedly. In this instance a very small quantity had been used, not a tenth part of what had been administered in other cases. Witness could not account for the patient dying, and was certain there was no disease about him. So strong and powerful an agent was chloroform, that it could not be administered without some amount of risk and danger, and the penalty the public must pay for the alleviation from pain would be a death occasionally. A similar death occurred about twelve months since at St. Thomas's Hospital, and many other deaths might be recorded. It might be used one or two thousand times, or more, successfully, and was of great assistance to the operator. The public ought to know the danger and great risk attending its administration. In many cases where chloroform had been used witness had waited with breathless attention for the recovery of the patient. Witness strongly objected to its use.

The Coroner then summed up the evidence, remarking at some length on the melancholy circumstances of the case, and the jury, after a brief consultation, returned a verdict of "Died from the effects of chloroform."